Surface Design in Architecture

Trend Forecast and Design Collection Development for Graphic Concrete

Anna Kuukka

Master's Thesis 2013

Aalto University | School of Arts, Design and Architecture

Department of Design | Textile Art and Design Degree Programme

Aalto-yliopisto
Taiteiden ja suunnittelun
korkeakoulu

Aalto-yliopisto, PL 11000, 00076 AALTO
www.aalto.fi

Master of Arts thesis abstract

Author Anna Kuukka

Title of Thesis Surface Design in Architecture – Trend Forecast and Design Collection Development

Department Department of Design

Degree Programme Textile Art and Design

Year 2013 **Number of pager** 121 **Language** English

Summary

This Master of Arts thesis is made in co-operation with Finnish design company Graphic Concrete. The thesis studies surface design in architecture through trend forecasting in order to create a design strategy and a renewed concept for GCCollection™ of ready-made patterns targeted for concrete surfaces. The aim is to create comprehensive instructions for the management and product design for the collection.

The trend forecast and design strategy are based on expert interviews among Graphic Concrete stakeholders, with questions addressing both the generic phenomena affecting the industry, and the operational user needs for the collection. The forecast aims to translate the trend insight into illustrated trend descriptions, creating a platform for the new collection concept. With respect to the company's business model and customer segmentation, the design strategy covers the positioning of Graphic Concrete product categories, requirements for logistics and pattern design, and portfolio management for the GCCollection™.

The main deliverables of the thesis project are the design guidelines and the illustrated concept for the GCCollection™. The design guidelines functions as an in-house tool with detailed instructions covering the operational role, character, and logistic requirements of the collection. The concept section features product category descriptions targeted to Graphic Concrete clientele with nine patterns, which demonstrate the collection design, and exemplify the required presentation format.

Keywords Trend Forecasting, Design Foresight, User Research, Expert Interviews, Product Development Strategy, Design Management, Product Portfolio Management, Design Guidelines, Collection Concept Development

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Taiteen maisterin opinnäytteen tiivistelmä

Tekijä Anna Kuukka

Työn nimi Surface Design in Architecture – Trend Forecast and Design Collection Development

Laitos Muotoilun laitos

Koulutusohjelma Tekstiilitaiteen koulutusohjelma

Vuosi 2013 **Sivumäärä** 121 **Kieli** englanti

Tiivistelmä

Opinnäyte on tehty yhteistyössä suomalaisen designyrityksen, Graphic Concreten kanssa. Opinnäyte tutkii pintasuunnittelua arkkitehtuurissa trendien ennustamisen kautta. Tavoitteena on rakentaa designstrategia ja uudistettu mallistokonsepti GCCollection™ -nimiselle tuotteelle, joka on yrityksen oma, käyttövalmiita yleiskuoseja tarjoava designmallisto betonipinnoille. Opinnäytteen päämääränä on luoda kattava ohjeistus malliston ohjaukselle ja tuotekehitykselle.

Trendiennuste ja designstrategia pohjautuvat Graphic Concreten viiteryhmiin kuuluvien asiantuntijoiden haastatteluihin. Haastattelukysymykset käsittelevät sekä toimialaan liittyviä ilmiöitä että malliston toiminnallisuuteen liittyviä käyttötarpeita. Ennusteen tavoitteena on muodostaa kattavat kuvaukset trendeistä, jotka muodostavat perustan malliston uudelle konseptille. Designstrategia esittelee Graphic Concreten liiketoimintamallin ja asiakassegmentoinnin. Lisäksi se kattaa yrityksen tuoteryhmien keskinäisen asemoinnin, GCCollectionin logistiikan ja kuosisuunnittelun edellytykset, sekä ottaa kantaa tuoteportfolion hallintaan.

Opinnäytteen päätuotteet ovat designohjeistus sekä kuvitettu konsepti GCCollectionille. Designohjeistus on suunniteltu ohjaustyökaluksi yrityksen sisäistä käyttöä varten. Se sisältää yksityiskohtaiset kuvaukset malliston toiminnallisesta roolista, luonteesta ja käyttökohteista, sekä logistisista vaatimuksista. Konseptiosio sisältää Graphic Concreten asiakkaille suunnatut tuotekategoriakuvaukset ja yhdeksän kuosin kokonaisuuden, joka havainnollistaa malliston designia, sekä kuvitetut esimerkit designien presentaatiotavasta.

Avainsanat Trend Forecasting, Design Foresight, User Research, Expert Interviews, Product Development Strategy, Design Management, Product Portfolio Management, Design Guidelines, Collection Concept Development

Surface Design in Architecture

Trend Forecast and Design Collection Development for Graphic Concrete

Abstract

This Master of Arts thesis is made in co-operation with Finnish design company Graphic Concrete by Anna Kuukka from Aalto University, School of Arts, Design and Architecture, Department of Design, Textile Art and Design Degree Programme. The thesis studies surface design in architecture through trend forecasting in order to create a design strategy and a renewed concept for GCCollection™ of ready-made patterns targeted for concrete surfaces. The aim is to create comprehensive instructions for the management and product design of the collection.

The trend forecast and design strategy are based on expert interviews among Graphic Concrete stakeholders, with questions addressing both the generic phenomena affecting the industry, and the operational user needs for the collection. The forecast aims to translate the trend insight into illustrated trend descriptions, creating a platform for the new collection concept. With respect to the company's business model and customer segmentation, the design strategy covers the positioning of Graphic Concrete product categories, requirements for logistics and pattern design, and portfolio management for the GCCollection™.

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1: Introduction

This thesis is made in collaboration between a Finnish design company Graphic Concrete and MA student Anna Kuukka in Aalto University, School of Art and Design, during October 2012 to April 2013. By studying surface design in architecture, the thesis aims to create a renewed concept for GCCollection™, an in-house collection of ready-made patterns targeted for concrete surfaces. The project consists of a research section with the focus on trend forecasting, and a production section concentrating on strategic product development and its implementations. The main entities of the thesis include the trend forecast, product development strategy for the GCCollection™, and the manifestation of the research insights in the form of design guidelines and collection concept. By responding to the needs of Graphic Concrete stakeholders and taking into account the design management, the collection concept intends to create a solid, justifiable platform for the future product development in the company.

The different portions of the thesis are not created solely for academic purposes, but instead, are targeted at potentially wider range of designated stakeholders of Graphic Concrete to be used as independent entities.

The trend forecast aims to provide an overall view of the main trends influential in generic markets of Graphic Concrete, to define the possibilities of future surface design solutions, and to articulate the upcoming preferences and demands of the pattern design. The emphasis of the trend research is on the visual translation of trends for the product development of Graphic Concrete. Therefore, the presented trend descriptions and benchmarking are centred upon solutions related to concrete. The trend forecast is set to create a platform for GCCollection™ concept, but it functions also as a tool to engage Graphic Concrete's clientele and other stakeholders.

The design strategy is based on the interviews of the present and potential customers of GCCollection™, the existing principles of design management, and the operational business model of Graphic Concrete. The design strategy is targeted strictly for the internal use of the company. Due to the public nature of the thesis, the aspects addressing potential commercial secrets of Graphic Concrete are deliberately ruled out.

The main deliverables of the thesis project are the new concept and supporting design guidelines for GCCollection™. The concept takes into account the most prominent trends related to architecture and surface design in the construction industry in the span of five to ten years from now. The new concept and guidelines are set to function together as a joint guiding tool, a road map, for the internal and external stakeholders of Graphic Concrete in the future product development and marketing. However, the main focus is on the design solutions which are applicable in the near future, in the end of 2013. The visualisation of the GCCollection™ concept features sub-categories with illustrated pattern designs, and a demonstration of the revised product presentation format.

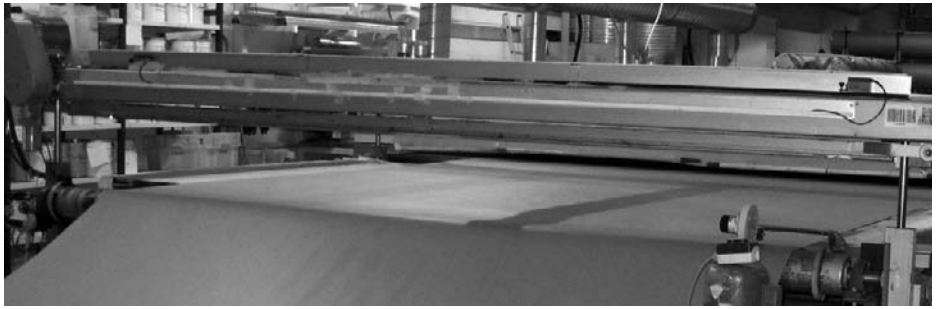
Company Introduction

Based on the invention by the Finnish interior architect Samuli Naamanka in mid-1990s, graphic concrete® has evolved from a patented technology to a company founded in 2002 with the same name, Graphic Concrete. Operating in both domestic and international markets, Graphic Concrete markets and sells graphic concrete technology by running meters. With the focus on high technological expertise in architecture, the company works in co-operation with different parties involved in construction projects, providing services from marketing to after sales and from design to element production.

The innovative technology of creating patterns on prefabricated concrete is based on applying a surface retarder to the concrete mold table as a special membrane. After casting the concrete, the retarder delays the drying process in selected areas according to the pattern printed on the membrane. The pattern on the concrete surface is created from the contrast between the intact smooth surface and the rough aggregate left exposed by the retarder. The technique enables creation of both unique images and repetitive patterns. The areas of use for graphic concrete® cover the range of public, residential, environmental, commercial, industrial and interior construction.

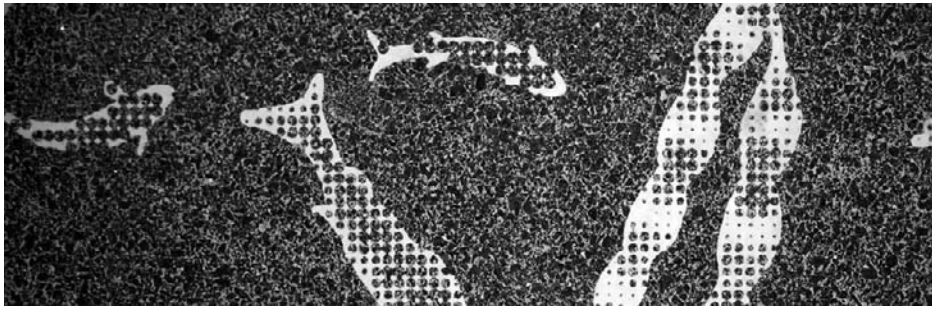
Additional company information on http://www.graphicconcrete.com./

0.1 | Printing screens pre-treated with emulsion



0.2 | Silk screen printing machine with the membrane

0.3 | Printed membrane placed on a mold table before casting the concrete



0.4 | Extract of a completed graphic concrete surface

2: Research Data and Methods

Research Objectives

The research scope was to create a trend forecast on surface design in architecture, and to generate a strategy for the development of the new GCCollection™. These research deliverables were used as the basis of my work of developing the new concept, and implementing it into design guidelines, concept descriptions and visualizations. The starting point of my process was to establish the research questions for the project according to the defined scope. The primary research objective was to determine the content and the operational model of the in-house collection.

The main research questions are:

- What kind of the future trends and preferences are there in the field of surface design in architecture?
- What kind of product segments, and how many of them should there be in the GCCollection™?
- What should the visual design solutions look like?
- What should the level and content of communication be in terms of rational and emotional features in GCCollection™?

In addition, the following questions support the research:

- What kind of (new) applications could graphic concrete© have?
- What should be done in order for graphic concrete© to be used also in the interior surfaces?
- In what kind of ways could the patterns be memorable?
- Using the pattern repeat, what kind of solutions could be created so that the screen size would not be the determinant design factor in the collection?

Interviews

Expert interviews were the primary method of collecting data. The interviewees are a heterogeneous group of experts, sample of twenty-four persons, representing architects from private and public sector, interior designers, textile designers, professors, researchers, as well as producers and distributers of concrete industry. I conducted the round of interviews between November 12th 2012 and January 15th 2013. The interviews included fifteen one-on-one interviews, two group interviews with two interviewees, two phone interviews and three questioners answered in a written format.

I divided the interview questions into two categories (Appendix, p. 120). The questions in the first category were designed to fuel the trend forecasting process by uncovering the potential quiet, implicit and explicit knowledge of the target group. In addition to these questions targeted for the forerunners of the industry, Graphic Concrete was interested in the existing and potential customers of GCCollection™ with previous experience in working with graphic concrete©. Therefore, my second category focused on tactical issues related to the customer experiences and user needs in terms of the operational features of GCCollection™. Also, the set of questions featured direct questions regarding the physical appearance and characteristics of the actual end-products, the future pattern designs. The insights of the second interview category were used in the product development strategy for the collection.

Trend Research

Based on the expert interviews, the identified weak signals and particular trends were collected into clusters according to their relevance and causal relations. These

preliminary trend hypotheses were then compared with findings from literature, magazines, electronic publications, design portals, blogs, and other sources from the internet. This research phase known as coolhunting was carried out as an iterative process to evaluate and reinforce the initial insights gathered through interviews. The aim was to create a justified collection of the forthcoming trends through identifying the triggers influencing the development in the industry. Ultimately, the findings were placed on a trend matrix, a contrast chart, depicting their interrelationship with underlying values and motives influencing surface design in architecture.

For the trend descriptions, it was important to name the trend drivers, to highlight implementations and to pinpoint the forecast-specific features in order for the trend description to be able to fuel the concept work. With the research focus on visual solutions and possibilities of the future, it was necessary to establish a tool to illustrate the manifestations of the identified trends. Here, benchmarking was chosen as a means to translate the trend descriptions into more tangible scenarios. Signalling the direction of future trends, the chosen forerunner designs convey the main characteristics of each trend.

Literature

In the thesis, the theoretical approach to trend research is introduced in Chapter 3: Foresight Thinking and Trend Forecasting. This section aims to summarize the main principles used in forecasting process, but also to highlight the significance and benefit of foresight thinking in product development. The main literary sources used in this area were The Trend Forecaster's Handbook, by Raymond Martin (2010), Matkaopas tulevaisuuteen, by Elina Hiltunen (2012), and Edelläkävijät. Hiljainen, implisiittinen ja eksplisiittinen tieto muodin ennustamisessa, by Ana Nuutinen (2004).

During the trend research it became clear that there are few literary sources available that would directly address the current trends and phenomena from a visual point of view. Consequently, as the time-span of the forecast is the future between five to ten years from now, the publications targeting emerging trends were even scarcer. However, based on the signals collected from the interviews, some technological background information for the trend descriptions was supplemented from Interactive Architecture, by Michael Fox and Miles Kemp (2009), and Architextiles, edited by Mark Garcia (2006).

Workshops and Field Trip

During the thesis process, there were regular meetings with Graphic Concrete personnel where the progress of the project was reviewed. These workshops were a valuable source of information for the development of product strategy and design guidelines, as the company's internal stakeholders were able to share their know-how and technical expertise on the topic. In addition, the Graphic Concrete Communication Guidelines was a useful resource for generating an understanding of the brand specific design management.

Additional technical research was conducted during a field trip to Forssa, Finland, featuring company visits to both Graphic Concrete's printing facilities and Parma Ltd concrete manufacturer's factory. The field trip was a good opportunity to observe the entire production process of graphic concrete© in reality.

3: Foresight Thinking and Trend Forecasting

> *The future is not written, rather it remains open. The future is multiple, undetermined and open to a large variety of possibilities. That which will happen tomorrow depends less on the prevailing trends or any sort of fatalistic determinism, and more on the actions of groups and individuals in the face of these trends.*
>
> – Prof. Michael Godet, Laboratory of innovation, Strategic Foresight and Organization (Raymond, The Trend Forecaster's Handbook, p.148)

> *If foresight does not allow us to ascertain future, it at least allows us to design for one that we wish to come into being.*
>
> –Anne Rieselbach, (Rieselbach, Young Architects 11 – Foresight, 2010, p.12)

Why Forecast? Can the Future Be Prepared for in Advance?

Forecasting future is not an accurate science. There are no guarantees that what is forecasted today will come true tomorrow as such – so why bother, then? However, in terms of **foresight thinking**, it is important to look at the big picture; what can be gained by identifying emerging insights and creating forward views [1]? Strategic foresight thinking is the ability to create and sustain usable visions and to utilize their insights to benefit the organization [2]. Primarily, the motive is to **understand target markets** and their changing needs and requirements in order to design and develop new products and services, and also to improve the existing ones [3]. It calls for the **ability to predict the future demands, tastes and preferences** of the company's customers and operational environment, and not just to examine the present ones. This is the main factor that differs trend forecasting from the present tense user studies. Instead of trying to map out the current trends and to analyse the present situation, design foresight takes the approach further. The focus is on the implementation of the insight as a means to create direction, to **develop a strategic approach** to meet the new demands in the right time, place and fashion [4]. Design foresight is also a tool to enable, **clarify and speed up the interaction** between both internal and external stakeholders of a company. In addition, it **minimizes risks** by concretizing the future directions of design ideas, production and user behaviour in as early phase as possible [5].

The future is not an immutable factor to be passively adhered and conformed to, since future evolves towards what people make it to be. An individual company is able to take an active role in shaping the future and to independently operate as a generator of change. Through applying **proactive strategy** by conducting research and product development, it can seek out new product opportunities and exploit them before the competitors [6]. Furthermore, a well justified forecast influences the way others view the future. By influencing the expectations, the forecast may, for its part, reflect to the actions and choices the stakeholders make and what the actual future will become. For a company, foresight functions also as **a tool to connect with external stakeholders**. In addition to shaping conceptions of the future, the forecast can shape the opinions about the brand through communicating about relevant trends and interesting future insights. Thus the company is able to demonstrate its expertise in the field, create joint understanding, and convincingly build up a forerunner image [7].

The purpose of my thesis is to apply design foresight process in the development of GCCollection™, to revise its operational role in the Graphic Concrete's offering, and to create a new design concept for the company by combining forecasting and customer insight. The first step is a trend forecast illuminating the directions of surface design in the field of architecture. A **forecast is a description**, a view, of the probable future outlook within defined research area [8]. The scope of a forecast can cover evolution and shifts in society, culture, aesthetics, technology, politics, technology, ecology, consumption etc., or concentrate in a limited range of these factors. In the field of design, the focus of a forecast is usually on the trends affecting designs, uncovering the changes behind the trends, and with emphasis on the visual appearance of the future solutions. My thesis focuses on the potential future product features in surface design, and more specifically reflection of the forthcoming trends on pattern design within concrete industry and on Graphic Concrete™.

What's Next? How to Interpret the Future?

When talking about forecasting, the **concept of a 'trend'** is unavoidable. A trend can be defined as a pattern of change [9], a direction in which something new or different is moving and which has a consequential impact on the culture, society or business sector through which it moves [10]. In contrast, a **megatrend** is a phenomenon or phenomena that, based on past developments, has a recognizable direction and is believed to continue in similar manner in the future, as well [11]. It is 'a great wave' [12], a wider change consisting of multiple trends. Megatrends represent the current time and, in contrast to 'regular' trends, influence in multiple areas of life. They affect in a broad geographical span during a long period of time, from multiple years to even decades [13]. That is why megatrends can be assumed to tell about the future, too, and have to be taken into account in forecasting as underlying factors of change. In my thesis, the focus of trend research is on their visual manifestation and translation to product development of Graphic Concrete. However, it is important to recognize that even though a trend can be an aesthetic style or tangible product, it may also be an idea, philosophy or political or social movement, appearing in emotional, textural, psychological, or lifestyle changes [14].

In the search of future trends, a good method to identify them is to look for the weak signals in the present [15]. A **weak signal** is an idea or a trend, or an interrelated group of them, which will have an effect on the company or its operational environment. Weak signals can also be described as company's internal or external warning signs, events and directions of development that are too weak for their impacts to be defined [16]. When occurring, these signals do not seem significant, but they become crucial for the future development. A weak signal is the first indication of upcoming change, or the impact that decisively alters the course of events to a new direction [17]. Typically as a phenomenon, a weak signal has a small probability in coming true, but if actualized, it has a large potential influence [18]. They are only just emerging, and have no recognizable past, as they have not existed or been important before [19].

Targeting weak signals as such does not form a tangible outlook or provide tools to respond to the future. To be able to identify new trends relating to a defined study area, various signals must be collected, analysed and connected together. These **signal clusters predict the emergence of future trends**. Here, the **role of innovators** is prominent. These **forerunners**, being individual designers, companies, products or technologies, are significant because of **their ability to create and introduce signals** [20]. Another notable segment for forecasting in terms of product development is the customers who are **early adopters** of the innovations and opinion leaders of the market. These customers often have unusual sets of needs that make them pilots for the entire market. Recognizing the needs of this group and designing products and services that satisfy those needs can keep the company ahead of competitors [21]. According to the theory of 'Diffusion of Innovations' by sociologist Everett Rogers, innovators and early adopters are followed by **early majority, late majority**, and finally **laggards** [22]. This chronology creates an estimated time frame for the trends to be adopted by the customers. Thus the Diffusion of Innovation model can support the optimal timing of new product launches.

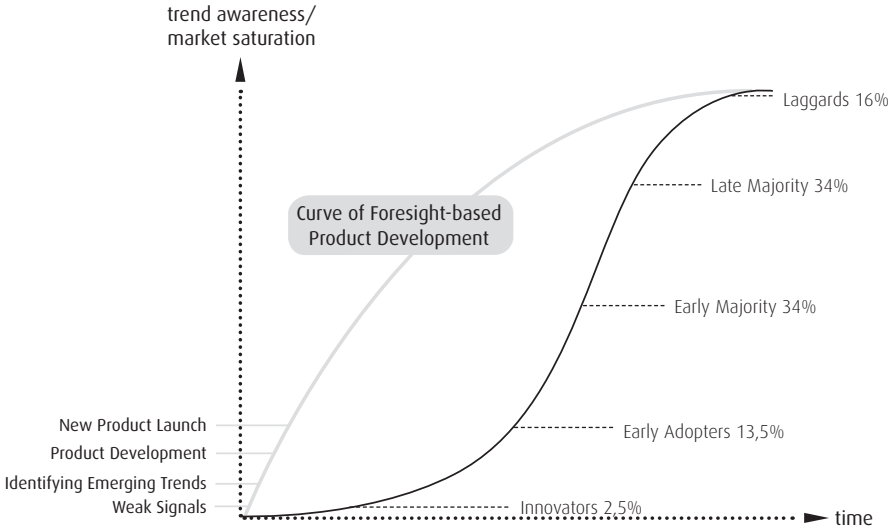


FIGURE 3.1: Diffusion Innovation Curve
(adapted from Raymond, 2010, p. 19; Nuutinen, 2004, p. 81)

One method for examining the forerunners is **benchmarking.** It studies the ideas and operations models of an individual or a company, which has first launched a novel phenomenon, a product innovation or a form of activity. Benchmarking is particularly suitable method for getting preliminary information of the future from a specified field, such as technology or architecture. Benchmarking is based on the presumption of things developing in a certain direction [23]. Therefore, the forerunners are perceived as signposts, indicators communicating what the future will be. In my thesis, the emphasis of research is on showcasing design, technological and material innovations related to architectural surfaces. The aim is to identify the **trend drivers**, the key factors affecting the implementations, and to pinpoint the characteristics of the design to be adapted for product development of the future GCCollection™.

The insights of trend forecast are applied in the **concept design** phase. Concept design means developing and evaluating alternative solutions and design variants according to the designated business field and company [24]. The role of concept design is to define the main guidelines for design, but still leaving options for alternations and development, not going to the specifics of production [25]. With the development of GCCollection™, the scope of concept work is to combine the foresight data, user feedback from expert interviews, information from in-house R&D and subcontractors, and reflecting it throught the design management of Graphic Concrete. Using the **forecast as a platform**, the starting point is to identify the most potential trends, themes and features applicable for the brand-specific design concept. The concept is then assessed and developed in terms of the overall product development strategy.

This thesis demonstrates the presented principles of foresight thinking and the methods of forecasting applied both in the trend forecast on surface design and the production-based sections addressing the strategic product development of Graphic Concrete.

[1] Hines, Bishop, 2006, p.1
[2] Nuutinen, 2004, p. 19-20
[3] Kahn, 2005, p. 192
[4] Stenros, 2.12.2011
[5] Nuutinen, 2004, p. 53
[6]Nuutinen, 2004, p. 57-58
[7] www pages of Tulevaisuusopas, 1.1.2013
[8] Kamppinen, Kuusi, Söderlund, 2003, p. 890-891
[9] Kamppinen, Kuusi, Söderlund, 2003, p. 902
[10] Raymond, 2010, p. 14
[11] Mannermaa, 2004, p. 73
[12] Kamppinen, Kuusi, Söderlund, 2003, p. 895
[13] Brannon, 2000, 289-302
[15] Raymond, 2010, p. 31
[15] Hiltunen, 2010, p. 102
[16] Hiltunen, 2010, p. 111
[17] Kamppinen, Kuusi, Söderlund, 2003, p. 892
[18] Mannermaa,2004, p. 44
[19] Mannermaa, 2004, p. 113
[20] Nuutinen,2004, p. 82
[21] Kahn,2005, p. 204
[22] Raymond, 2010, p. 17-19. Nuutinen, 2004, p. 81-86
[23] Nuutinen, 2004, p. 43-44
[24] Salimäki, 2011
[25] Keinonen, Jääskö, 2004, p. 28-29

4: Trend Forecast: Surface Design in Architecture

Trend Forecast Introduction

In this thesis, the primary goal of the trend forecast is to provide insight for the development of a strategic platform, a road map, for the development of GCCollection™. The time-span of the forecast is the future between five to ten years from now. The chosen scope aims to create a strategic perspective to the tactical goals of product development for Graphic Concrete in the near future, as well as to offer more long-term guidelines, too. Second, the forecast aspires to provide inspiration, and to raise interest and discussion in the field of surface design and architecture.

The trend forecast Surface Design in Architecture consists of three parts: an introduction to the changes in the operational culture, Topography of Trends mapping out the driving forces affecting the trend climate, and the trend descriptions of the identified trends. Each trend description consists of a narrative text depicting the trend entity, followed by a summary of trend drivers, implementations and specific features, and ends with benchmarks illustrating its visual manifestation.

The presented benchmarking cases in the forecast are derived from the insights based on expert interviews. These interviews form the primary source of information of the forecasting research. The interviewees were chosen as representatives of diverse stakeholders of Graphic Concrete, including perspectives from the company's current customers, partners, professors and forerunners of the design field.

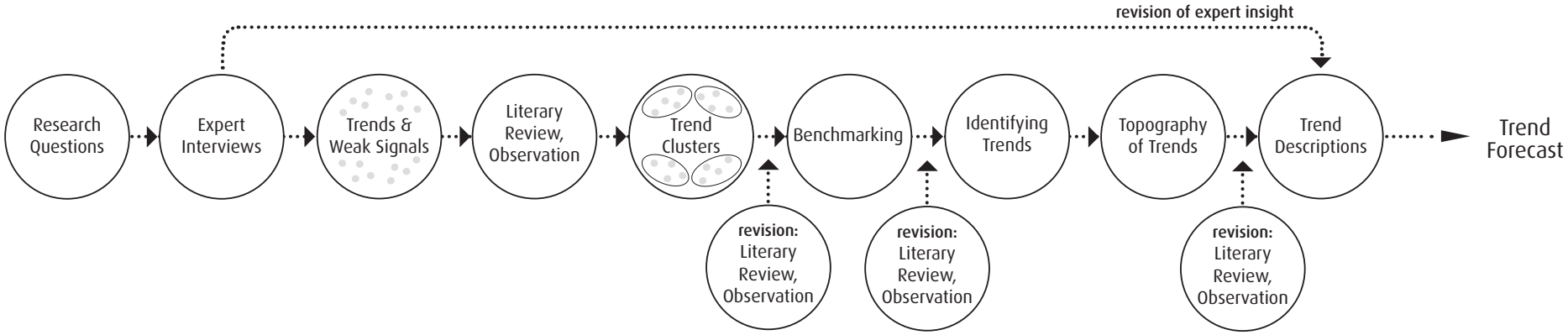


FIGURE 4.1: Trend Forecasting Process

The interviewees included the following experts:

Heikki Aapro
CEO at Parma Ltd.

Antti Ahlava
Head of the Faculty of Architecture at Aalto University, Adjunct professor (Docent) in Spatial Design at Aalto University, Principal at helsinkizurich

Johanna Gullichsen
Designer at Johanna Gullichsen

Päivi Halme
Architect SAFA, Public Works Department, Architectural Division, City of Helsinki

Elina Helenius
Textile Designer MA

Liisa Ilveskorpi
Senior Consultant, Architecture and Urban Planning, WSP Finland Ltd.

Maritta Koivisto
Editor in chief, Architect SAFA at Betoni, Concrete journal in Finland

Anna Kronlöf
D.Sc. (Tech.), Principal Scientist, VTT Technical Research Centre of Finland

Pertti Kukkonen
Concrete Sculptor

Curt Lindroth
Export Manager, Elematic Oy Ab

Outi Martikainen
Textile Designer MA

Jussi Murole
Architect SAFA, partner at B&M

Kalevi Mäyrä
Factory Manager, Bina Advanced Concrete Products

Samuli Naamanka
Interior Architect MA, founder of graphic concrete™

Juha Pajakoski
Architect SAFA, Senior Specialist, Architecture and Urban Planning, WSP Finland Ltd.

Pekka Pakkanen
Architect SAFA, Partner at Huttunen-Lipasti-Pakkanen Ltd.

Jesse Pietilä
Interior Architect MA

Jarmo Pulkkinen
Architect SAFA at Helamaa and Pulkkinen Architects Ltd.

Markku Puumala
Architect SAFA, Partner at Heikkinen-Komonen Architects Ltd.

Heikki Ruski
Architect SAFA at HMV Architects Ltd.

Tuomas Silvennoinen
Architect SAFA, Design Director, Partner at PES-Architects Ltd.

Hanna Suvela
Architect SAFA at HMV Architects Ltd.

Lyuta Tanaka
Managing Director at BEVEL corporation

Finn Theilgaard
Managing Partner at lwd engineers

4.1: Accelerated Pace, Growing Demands

“ The time emphasizes individuality.
– Heikki Ruski

“Things begin to feel worn out and copied even when, as a matter of fact, there wouldn’t even be that many completed buildings.
– Tuomas Silvennoinen

There is a revolution shaking the ideal of architecture.

The same phenomenon is already dominating the fashion industry, interior design, and all the other design intensive industries. The change revolves around the speed of information, a **constant flux** which causes trends and fashions to change quickly. Being able to spread through Internet and its design portals, blogs and social media, **architecture has grown global**. The virtual audiences can now access architectural fairs, events and biennales in real-time, enabling the fast and wide publicity of innovations. As the availability of information is limitless, the former domination of a singular main style at a time is over. Now, as a megatrend, the **aesthetic field is fragmented** and the face of architecture has grown diverse.

The urge to create unique solutions, to stand out, is bringing artist cooperation in a prominent role. Along with the **desire of individuality** and to create long-standing solutions, art is increasingly seen as a pivotal component of the architectural entity, not only as a mere element of decoration. Art is also ordered by the public administration in planning, development of green areas and environmental architecture. Emphasis especially on the surface design is making architects join forces with external experts, such as sculptors, graphic designers, interior architects and textile designers along with lighting designers and multimedia artists. The overall **growing appreciation towards appearance** is also reaching the building developers, who are now beginning to understand the commercial value the aesthetic solutions are able to create for a building.

With the almost limitless possibilities for creativity, architects are eager to try out new possibilities and to discover novel technologies instead of utilizing existing ready-made solutions. Simultaneously, there is pressure from the client to deliver unforeseen designs. In terms of surface design, the main question is how to treat the surface, to bring out a deeper essence of the material to complement the architectural concept at hand? There is also a **conflict between the call for novelty and the actual offerings** of the material suppliers. Although the pace of trends in design has become faster, the ranks of product development are relatively slow to respond to the challenge of applying new technologies. In addition, using a forerunner product has its risks, as there are limited possibilities to evaluate the long-term functionality of the innovation in advance. In the process of commercial architecture, the responsibility of an individual architect is increasing, but the possibility to influence to the critical solutions is decreasing. Instead, the power is shifting towards the developers, who often get the final word based on their financial control. Also, the overall cost-orientation is increasing, putting pressure to both the architect in charge of selecting the materials, as well as the suppliers to be able to offer cost-efficient products to the competitive markets.

The accelerating speed of change of trends and ideas has a downside. As novelty and aesthetic invention have become the unofficial norm of contemporary architecture, architects are challenged to create new looks and material solutions in an increasing pace. With the possibility to visually access the latest designs almost in real time, a building designed yesterday seems today already dated, as the taste preferences already shift during the long period of construction process. Therefore, **architecture is turning more commercialized and entertainment-driven**. This is related to post-modernism in general, as the difference between the so called high culture and pop culture is fading. Inflation of the architectural value has bred a new type of **expendable buildings**. There is a gap between diverse buildings according to their purpose of use. The residential buildings and urban scene are more invested in, whereas the logistic sites, buildings of commerce and parking are aesthetically poor and not even aimed to withstand time. This is a singular direct counter trend to the demand of sustainability, which is otherwise dominating the operational culture in architecture.

4.2: Contrast Chart: Topography of Trends

Based on the insights from the expert interviews and research findings, this chart illustrates the mental climate of the main values and motives influencing surface design in architecture, and the identified trends of that field. Also, it demonstrates the interrelationship of these trends.

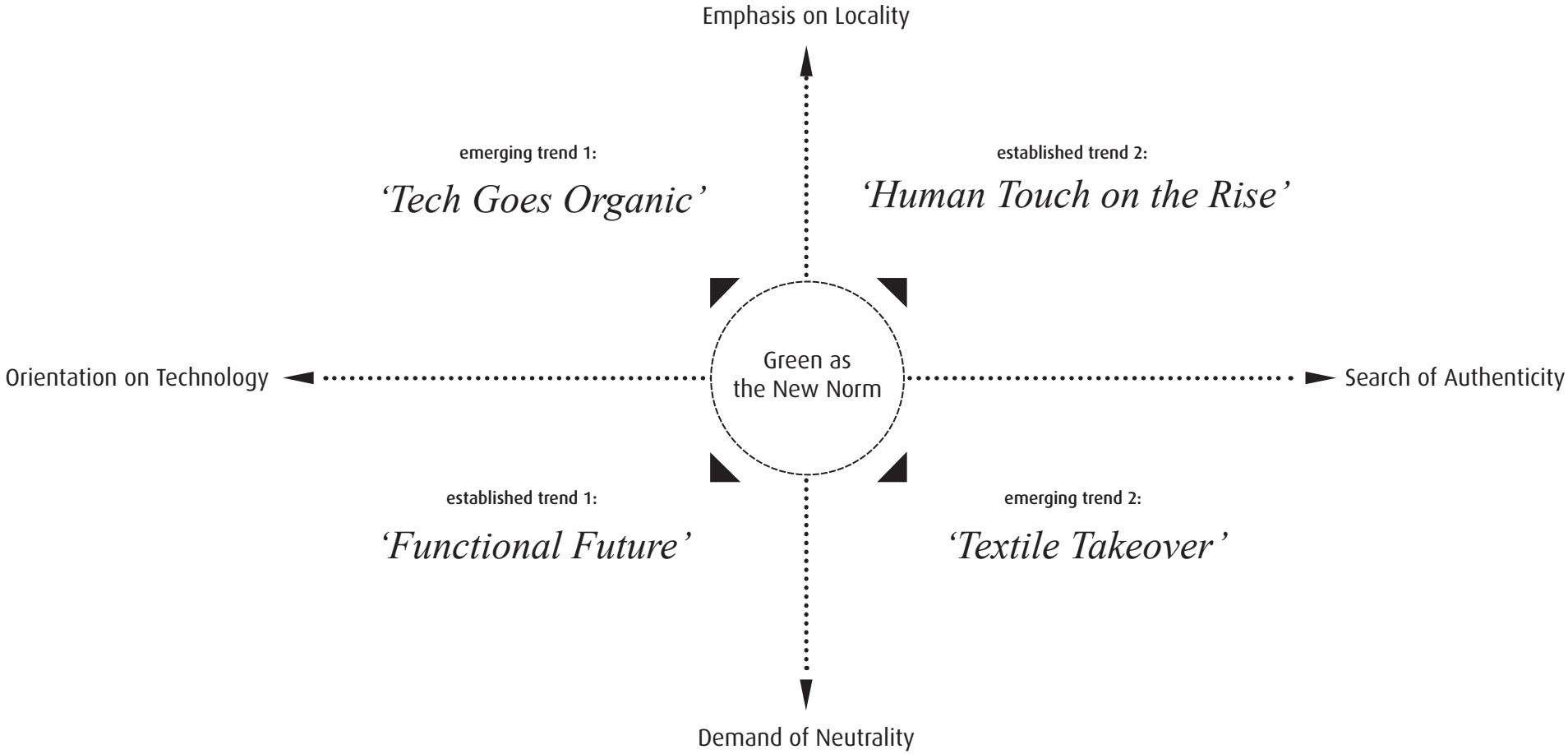


FIGURE 4.2: Contrast Chart: Topography of Trends

Green as the New Norm

“ Today, ecological solutions are elitist – tomorrow, they will be mainstream.
– Jesse Hietanen

There is no going back; sustainability is becoming the absolute ‘must’ of all the design solutions, materials, and production processes in architecture.

Eco-friendliness is growing out of its semi-elitist status as a value-adding feature, or worse, as mere ‘greenwashing’, to an unambiguous norm governed by the legislation. Sustainability calls for **energy-efficiency, low emissions**, as well as **lifecycle sustainability** including both the processes and the end-result. The most important ecological factor in architecture is the life span of the building, the need of maintenance and repair, which determines the overall sustainability, as the effects are divided to the number of years in total. Therefore, the key element is to understand the short-term and long-term perspectives affecting architectural solutions.

The **climate change** is the biggest trigger which poses new demands to the quality of construction and building maintainability. This is seen in the polarization of extreme weather conditions; the Northern Hemisphere encounters growing amount of rain along with seasonal differences becoming more even, as its southern counterpart suffers from drought and excess exposure to sunlight. Also, the climatic extreme conditions, such as typhoons and floods, become more frequent in designated areas. So there is a need for solutions that take advantage of **energy-conserving strategies** such as building orientation and openings to optimize opportunities for daylighting and desired solar energy gain, with passive cooling opportunities. Correspondingly, avoiding thermal losses, rain water treatment abilities and humidity endurance are equally needed abilities in terms of construction materials.

Being ‘green’ is not about being complicated, but rather **minimizing the technological load**. There is a need for operationally reliable, simple solutions of easy maintenance yet offering high efficiency and long-term durability. The principle of ‘design globally, produce locally’ is more valid than ever, and **transparency** is a self-evident demand from both material origins and production processes. As end-users and clients are becoming increasingly aware of the resource consumption of different building materials and techniques, the general preference leans towards **carbon neutral design, passive sustainability systems, renewable energy sources and reduction of water consumption**. Also, more development is needed in reparation techniques and processes relating to **reusability of components**. This is linked to the idea of ephemerilization; the ability to achieve more by using fewer resources and reducing material consumption, thus creating more sustainable end-solutions.

As the environmental consciousness is growing, more attention is paid also to urban planning and civil engineering in terms of creating enabling environments and infrastructure that stimulate and support sustainable ways of living. The key element for sustainable lifestyle solutions is the shift from societies focused on ownership to societies based on values and services. This also means a more **participatory role of the end-users** in designing and sculpting the environment. The environmental solutions are not only aesthetic, but carry out functional activities, as well. For instance, green walls are used for cooling down buildings, and roof top gardens absorb rain water, as the planting among the constructed milieu produces oxygen and absorbs carbon dioxide.

Emphasis on Locality vs. Demand of Neutrality

“Surface creates meaning. It’s a means to connect the building to a place and time.
– Heikki Aapro

In architecture, the surface is not an isolated element, but a reflection of the overall concept of a building. Therefore, surface design holds a strong value. Regarding the role of visual communication in surface design, the field of architecture is strongly polarized between two opposing camps. Both are pursuing uniqueness, but in contrary ways.

“You always want to tell a story of the building you are making – it should be visible outward.
– Markku Puumala

The first ideology puts **storytelling** to the leading role as a means of connecting the building to its surroundings. Emphasizing the location, its history and characteristics, the objective is to address the viewer directly and provide a straightforward **message of the use and the identity of a building**. Here, architecture can be seen expressing a strong statement by connecting the venue to a specific theme through figurative ornamentation, bold illustration, material choices derived from local origins, and even informative iconography. Contrary to the abstract, art-like ‘traditional’ architecture, the meaning is communicated straightforwardly which, simultaneously, is stretching architecture towards pop culture. The emphasis of locality has a strong appeal due to the increase of people longing for a **sense of belonging and communality** as counter the trends of globalization and the idea of homogenous world culture. The way of using unique, highly identifiable design solutions and materials can also function as a tool to connect building to a district. By creating joint visual languages and symbols, linking indoor surroundings with outdoors, the sense of ‘local theme’ can **make the scale of architectural milieu more humane and approachable**.

“It happens easily that a phenomenon emerges quickly, and the world gets fed up with it in a flash, there comes a counter reaction.
–Tuomas Silvennoinen

The second school of thought relies on the more sedate and traditional approach to surface design in architecture. The driving forces are the virtues of **long-lasting design and aesthetic durability**. The demand of neutrality also enables multipurpose use of the building. In terms of surfaces, this is realized through non-figurative, abstract textures and conventional classic designs, the ‘basic patterns’. This anonymity is based on the established role of architecture of being unbiased, and not interceding any opinions or statements of its own. There is also an underlying desire **to avoid risks caused by being overly contemporary, 'too trendy'**, which, in turn, can be interpreted to reflect temporality. The potential excessive currentness is considered to undermine the sense of security and safety that are sought after features especially in residential buildings. Also, the use of recognizable surfaces can be seen to compromise gravely the uniqueness of an individual building if the design may be associated to a similar one, found in another venue. At the same time, even though constantly aiming at uniqueness, **the idea of neutral design follows more closely to the general trends of global architecture** than the one emphasizing locality.

Orientation on Technology vs. Search of Authenticity

“Architecture seems to be moving towards the use of evermore seamless materials such as resins and polycarbonate fibers in order to create new forms that defy conventional geometries. At the same time, there is a longing for texture and irregularity, perhaps because this implies the presence and inconsistency of the human hand.

–Tod Williams & Billie Tsien (Cohen; Moeller Jr., Liquid Stone – New Architecture in Concrete, 2010, p. 108)

“Surroundings have a strong influence on the wellbeing of people!

– Elina Helenius

“Functional pattern, what is functional in pattern? Probably effecting on not only in visual but in heart somehow.

– Lyuta Tanaka

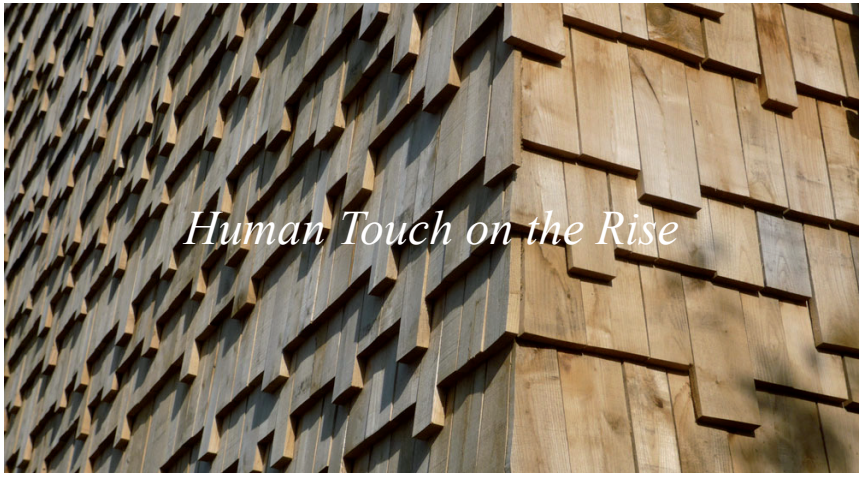
Technology has been and remains among the primary drivers of product development. We are only beginning to deploy the possibilities technology is offering, and not only regarding physical product qualities, but also in the production process and the design phase, too. There are new parametric tools, such as Building Information Modeling (BIM), that enable functional and aesthetic variation in the industrial process. Design is no longer based on the traditional mass production of identical end-products, but allows the creation of more **agile, tailor-made, yet cost-efficient series and unique solutions**. Also, buildings are becoming **autonomous monitoring systems** with self-governing maintenance, such as ventilation and heating abilities. The technology is integrated in the shell, making the building skin alternate according to the changes in conditions. Instead of using a palette divided into singular material choices, the buildings are constructed of **composite materials**, creating more seamless surfaces, shapes and entities.

The megatrend of urbanization has the heaviest influence on the visibility of technological solutions, as large masses of people require more infrastructure, transportation and services. Also, the aging population is accumulated towards urban areas, closer to services. This brings about **new needs of communication and accessibility, social sustainability, executed by using information surfaces**. The amount of commercial possibilities is even greater. This immaterial content is portrayed in both interior and exterior surfaces which function as digital platforms, integrated to the holistic operational systems of buildings.

There are risks in using technology, too. Even though there are growing possibilities to incorporate changeable visual content to surfaces and modify their appearance, to make a building ‘live’ with the changes of time, technology as a means is nevertheless a reflection of its own age and temporary preferences. Consequently, there is a counter trend to the extending amount of digital surroundings and artificiality, which can also be perceived as inhumane, cold, and aloof. Through embracing **traditions** and **authenticity**, people are turning away from technological approach in order to seek out **real-life tangible experiences**. In a defence of the **sense of historical continuum**, there is an emerging respect towards quality craftsmanship and traditional building techniques. The fundamental motive is to find more durable, good-quality and trustworthy solutions. The established methods are considered to reflect a deeper approach to architecture, as the surface is not only an individual element among building materials or a means to express a desired communication, but a part of the overall architectural process itself.

There is a **return to traditional building techniques**, which are partly updated to fit the contemporary civil engineering, such as combining prefabricated elementary structures to on-site surface treatments like plastering effects. Along the appreciation of craft, the sense of exclusive physicality is also increasing. This appears in the use of lasting quality materials, preferably of local origins and therefore more sustainable in terms of the construction process.

4.3: Forecast Descriptions



Functional Future

Established Trend 1

“ In the future, it’s possible that the design an architect creates for a building facade or an interior surface has less significance than the information that will be added to it.

– Antti Ahlava

“ We do not inhabit architectural space simply for shelter; we do it so because we need the experience of the space.

– Fox, Michael; Kemp, Miles (2009). Interactive Architecture. New York: Princeton Architectural Press, p. 158.

“ As it becomes easier to print digitally at any size, and on just about any surface, the disjunction between material and pattern means that the pattern itself can be an active element in architectural composition.

– Nigel Coates (Garcia, M. (Ed.). (2006). Architextiles (Architectural Design Journal Nov/Dec) (Vol. 76 (6)). London: Wiley-Academy.)

1.1 | You Fade To Light, interactive installation by rAndom International for Philips Lumiblade. image: rAndom International.

The 'one-size-fits-all' mentality applies no longer, thanks to interactive architecture and intelligent building materials.

The development of technology enables **custom tailorable solutions** in the design processes, material features, and overall buildings. This can be seen both in the context of interior usage and the performances of exterior skin.

As a global megatrend, computers and embedded computation will become fundamentally integrated to the way objects, systems, and architectural environments are designed. The trend's prominent application, **mobile architecture**, can take on a variety of scales, ranging from small single-person enclosures to entire buildings. The spaces can be modified according to alternating needs. In the new **multifunction design**, movable architectural objects can share a common physical space to provide the means for diverse uses. Addressing issues like energy-use optimization, acoustic and visual control, security, lighting, and space division, the building can be adapted to activities on hand. **Interactive environment** offers convenience for home and office surroundings regarding the need of privacy, demand for communication and efficiency through spatial optimization. Because of the expanding information technology, the interior surfaces and screen solutions advance closer to each other. Applications for entertainment are activated by a motion sensor detecting movement. They also offer an educational component by combining a new kind of kinesthetic learning with entertainment experiences.

In the building frame and exterior skin the **smart materials** take on new performances. These may include power supply, lighting, information display, adjustable fenestration, and protection from environmental hazards like weather conditions including waterproofing, wind loads, temperature changes and seismic conditions. Through embedded sensors, nanoscale and responsive materials the building acts more like a self-maintaining automated system. In concrete materials, the emphasis is on the **improvement of performance abilities through new mechanical components**, like acrylic or fibreglass for re-enforcement, durability and lightness. Visual solutions are accomplished by using optical fibres, glass and reflectors. Especially the use of LED lights has a great potential due to the low energy consumption of the technology. Also, solar panels and thermal cables can be embedded to concrete surfaces as a part of the energy control and heating systems. Along with the development of 3D-printers which are able to merge multiple materials, it becomes possible to create new **composite structures and hybrid materials** with seamless surfaces. This makes it possible for concrete to be combined together with a wide range of functional components, too.

The integration of computational tools, such as 3D modeling software for real time simulation, allows architects to anticipate and test many of the issues that occur when building is at full scale, and also update the changes directly to the designs and required components. This makes possible optimization, controlling and executing exceedingly complex design and construction processes more efficiently. In terms of aesthetics, the methods of **parametric computer aided design** are visibly seen in Functional Future. The algorithmic patterns and geometric shapes are teamed up with three-dimensional structures which obey the same machine-made style. Compared to industrial mass production, they offer more variability and one-of-a-kind elements. **Information surfaces** are embedded to the overall design, and projected visuals and multimedia are used as a means to alternate the building facades. Integrated directly to the surfaces, digital content allows not just **visual variability**, but also response and interaction between the surface and the user, even to the scale of making an entire building skin serve as a giant user interface.

Because a growing amount of building surfaces is being harnessed into functional platforms, the amount of traditional static surface area is decreasing. Consequently, the demand for more **temporary, preferably digitally downloadable design is rising**.

Trend Drivers

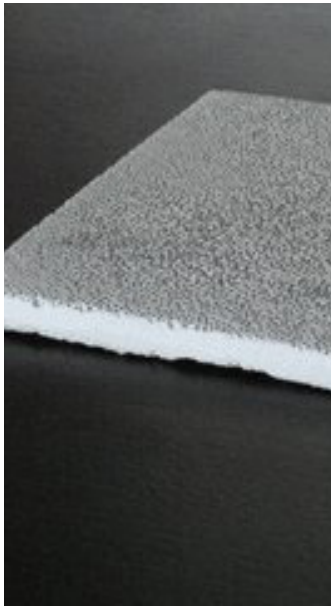
digitalization
urbanization
development of artificial intelligence
embedded computation
automation
accessibility
nanotechnology
development of 3D printers
multifunctionality

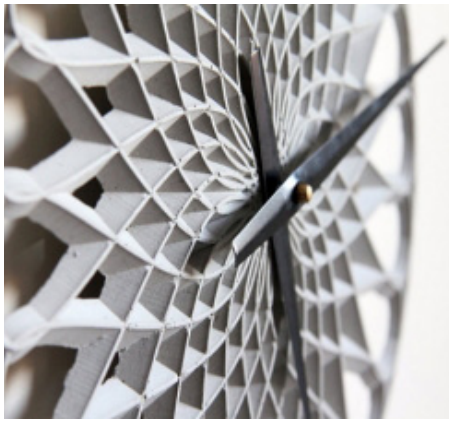
Implementations

functional materials
algorithmic tools & renderings
reactive materials
intangible solutions
fiber re-enforced concrete
composite structures
hybrid materials
information surfaces
downloadable content

Features

algorithmic patterns
geometric shapes
exchangeable visuals
3D-effect
parametric designs
durability
adaptability





1.2 | Hype-Matrix installation,
Hyundai Motor Group Exhibition Pavilion, Korea
by JônPaSang
image: Hyundai Motor Group
Based on a system called Mechatronics, the installation consists of mechanized styrofoam cubes, which can move in and out to form various patterns. The construction of 8 meters high and 45 meters wide transforms into imaginative patterns, rythms, and images across the three-sided display surface.

1.3 | Russian National Pavilion,
Biennale Architettura 2012, Venice, Italy
by SPEECH techoban / kuznetsov
image: Paolo Ferrarini
Divided in two parts, i-city and i-land, the Russian pavilion takes a digital and virtual approach to architecture. The i-city area (featured in the image) is completely covered with QR codes from walls to floors to windows, and the visitors are provided with a special tablet with a camera. The actual content of the display can be seen through the tablet monitor responding to the codes. The tiled skin of the interior creates a texture where the potential of information is present, but must be uncovered and pieced together by the users themselves.

1.4 | blingCRETE retroreflecting concrete
by G.tech
image: G.tech
Retroreflecting concrete using embedded light-reflecting pearls in the concrete. The technique also allows the production of custom-made, reflecting patterns.

1.5 | West Fest Pavilion, Wettswil am Albis, Switzerland
by Gramazio & Kohler
image: Gramazio & Kohler
The temporary wooden structure consists of 16 contorted elements made from 372 slats with the entire construction functioning as structural support. The elements were constructed by a digitally controlled robot that cut and placed the itmes according to an algorithmic pattern. Each component is individually rotated, producing a progression of subtly varied spaces.

1.6 | Para Clocks
by LeeLABS
image: LeeLABS
Inspired by radial patterns, the concrete clocks are designed using parametric software. In addition of providing ready-made designs, the company is developing an App that will allow customers to create their own designs.

1.7 | Touch Me installation
by Zane Berzina
image: Zane Berzina
Exploring the surface as an analoque to the human dermis, the artist uses thermochromatic paint as a sensor and medium for non-verbal communications. The Touch Me installation invites users to create visual responses through touch and metamorphoses from one state into another.

development of artificial intelligence
automation
accessibility
multifunctionality
reactive materials

1.8 | Privacy Glass, Microsoft HG, Lisbon, Portugal
by Smart Glass International
image: Smart Glass International
Based on liquid crystal molecules responding to electrical supply, the transparency of the glass walls can be adjusted, enabling the space to transformed more private according the user needs.

exchangeable visuals
adaptability

1.9 | Aperture interactive facade installation
by Frédéric Eyl
image: Frédéric Eyl & Gunnar Green
The facade consist of a matrix of apertures, similar mechanism as in camera lenses. The surface 'sees' what happens on the inside, and imitates the movement by opening and closing the apertures correspondingly, communicating the visual information from the interior to the facade.

digitalization
embedded computation
accessibility
downloadable content

1.10 | Corvinus University main building, Budapest, Hungary
by Erika Pasztor & MCXVI architects
image: MCXVI architects
The pixel wall, sized six-by-twenty-metre, expands over two interior floors of the building. Each pixel contains a LED light, and the ghanging colour patterns on the screen depict in real time the proportion of incoming spam/non-spam on the university's server.

composite structures
hybrid materials

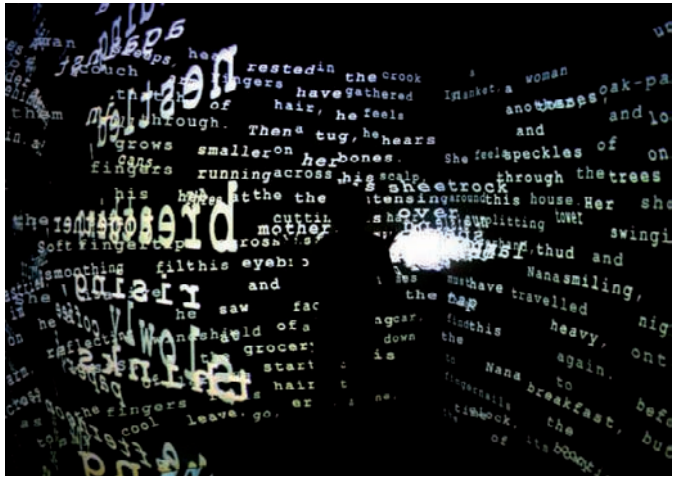
1.11 | Eska optical fiber installation
by Kengo Kuma
image: designboom
Using the optical plastic fiber technology from Luccon, Austria, the artist combines the heavy solidity of concrete with the delicacy of the translucent light. The high strength concrete is embedded with large numbers of optical fibers that make the material translucent. Without lighting, it appears to have a hard stone-like texture. When illuminated from behind, the light passes through the optical fibers, projecting light, shadow and even images onto the front of the concrete block, which acts like a screen.

urbanization
accessibility

1.12 | Augmented reality projection, Paris, France
by Pierre David
image: NOTCOT
Even though situated underground, the Six Senses Spa manages to provide the customer a sense of location by presenting a real-time image of the Paris skyline projected through the length of the spa.

adaptability

1.13 | Surfaces concept for future television
by NDS
image: NDS
A prototype called 'Surfaces' give a direction of how television could become the center of a much more compelling, immersive living room experience. Based on a non-projector display acting like wallpaper, the room-sized desktop creates a gigantic canvas. The technology allows the user to control and personalize the size and location of the main video window, as well as other information streams and contextual metadata that appear on the wall.

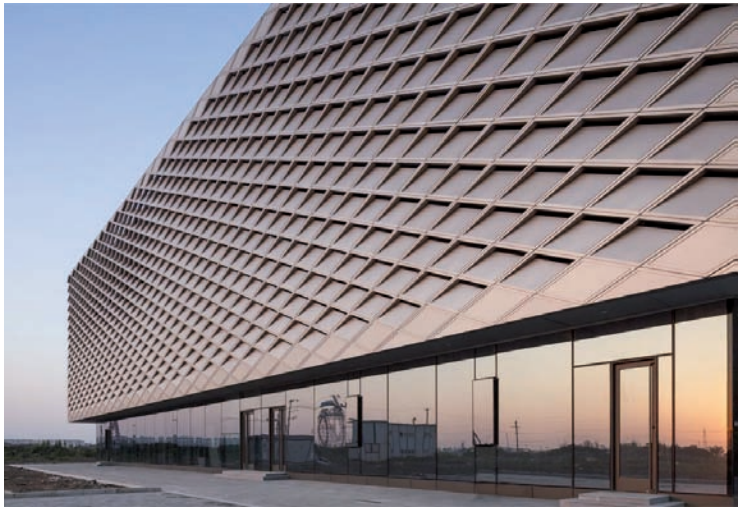


digitalization
embedded computation
multifunctionality
intangible solutions
information surfaces

1.14 | Sceen digital art installation
by Noah Wardrip-Fruin
image: Noah Wardrip-Fruin
The digital art piece creates a new form of bodily interaction with text through play. In the installation, a user first enters a room, called the 'Cave', which is a virtual reality display area with four walls surrounding the participant. Through bodily interaction, such as using one's hand, the user can move and bounce the text around the walls. The words can be made into sentences and arranged according the user's taste, but start eventually peeling off and moving more rapidly around the user, creating a heightening sense of misplacement.

geometric shapes
parametric designs

1.15 | Nantong Urban Planning Museum, Nantong, China
by HENN Architekten
image: Bartosz Kolonko
The façade is composed of two layers. The inner functions as the thermal envelope of the building, and the outer creates a reticulated metal structure skin. The façade's diamond-shaped grid is created using seven different panels that allow varying degrees of opening, thus forming a gradient pattern on the surface entity. This allows the amount of sunlight to be controlled according to the different functions within the building. Therefore, the office spaces are provided with maximum amount of natural daylight, and the exhibition spaces are featured with mainly closed façade with minimal openings.

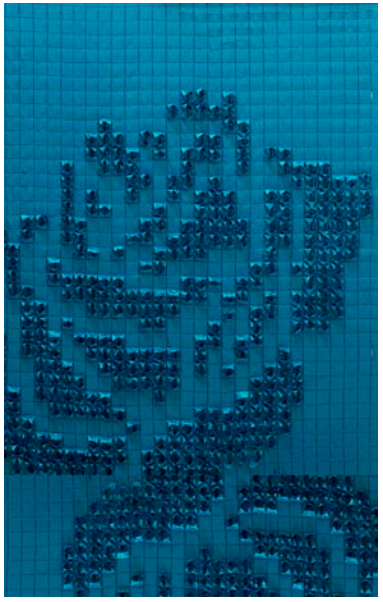


urbanization
hybrid materials

1.16 | Glassconcrete bench
by Ivanka, Zoltán Bencze & Szövetség39
image: Ivanka Studio and Concrete Works
The structure of the public furniture consists of concrete with embedded glass elements and lighting. During the day, the bench has the character of a sculptural, monolithic object. At night, when it is illuminated from inside, the numerous strips of glass break up the light, forming a distinguishable pattern contrasting the concrete surface.

3D-effect

1.17 | 3D surface as illustration
by Giles Miller
image: Giles Miller Studio
Using texture and reflection as a means of illustration, the designer creates playful and experimental interior and retail designs. The surface takes a subtle architectural approach by using pixelated textures that distance the artwork from its graphical origins.



accessibility
exchangeable visuals
adaptability

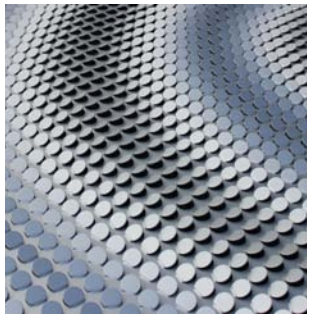
1.18 | Apeel interactive art installation, Ars Electronica
by The Green Eyl Sengewald Schumacher design practice
image: The Green Eyl Sengewald Schumacher
The project demonstrates how interactivity is based on people's behaviour. A wall is covered by a large number of coloured stickers, positioned in a grid. Participants can remove stickers, leaving white spots in the layout. As a result, the appearance of the surface is individually and collectively changed.

functional materials
algorithmic tools & renderings
reactive materials
algorithmic patterns

1.19 | Responsive Surface Structure I
by Steffen Reichert
image: Achim Menges
A prototype of research project in ICD Universität Stuttgart. The aim was to develop an intelligent wooden surface structure that adapts the porosity of its skin, and related cross-ventilation, in response to relative humidity in the environment without the need for external mechanical control devices.

multifunctionality

1.20 | Kilden Performing Arts Centre, Kristiansand, Norway
by ALA Architects Ltd.
image: Kilden
The interior of the concert hall creates a tactile artifact which also improves the acoustic perfromance of the space. The walls are composed of concrete elements with alternating geometric shapes, which together form a unitary, folding, acoustically optimal surface structure.



digitalization
3D-effect
durability
adaptability

1.21 | Dri-Design photographic panels
by Ombrae Imaging Technology
image: Ombrae Imaging Technology
In the technology using light and shadow to create visuals, the original image is broken down into individual pixels. Each pixel's optimal reflective position is digitally calculated and punched into the 3D metal wallpanels, where they act as reflectors to catch light or cast a shadow. The holographic image presents slightly differing appearances depending on the lighting and viewing angle.

Human Touch on the Rise

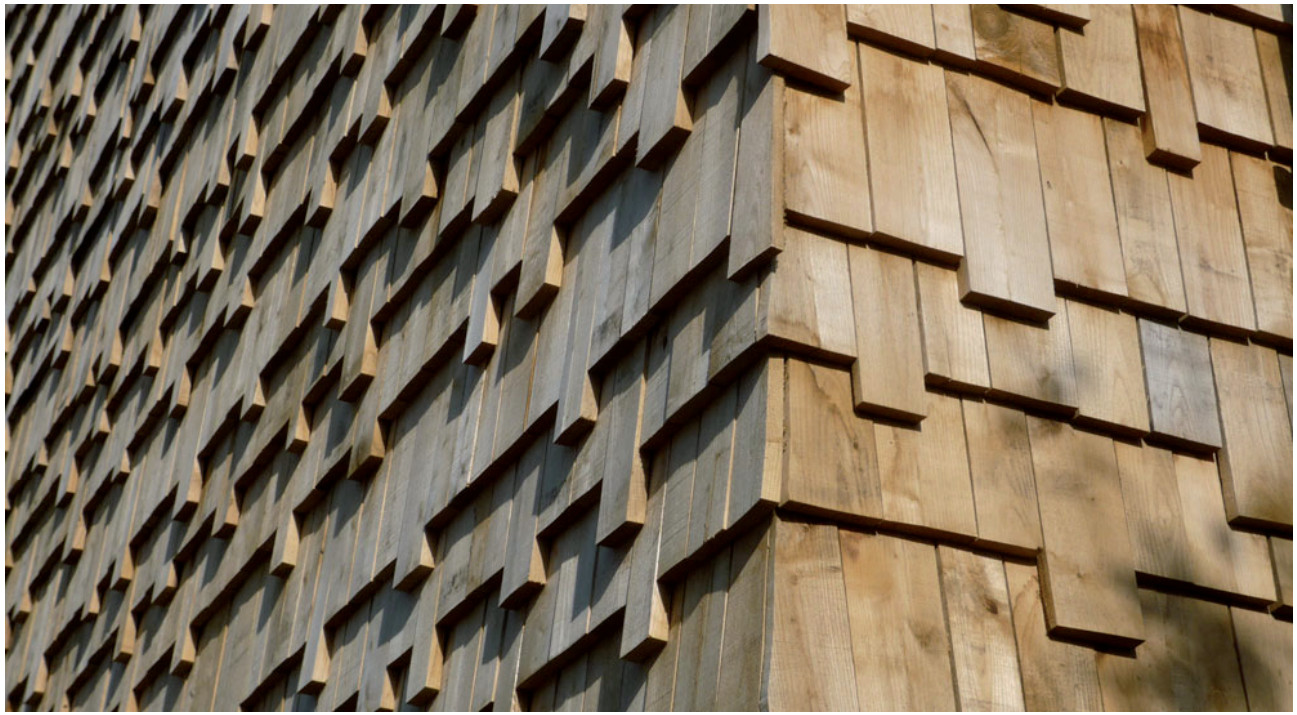
Established Trend 2

“Especially due to the world of electronic media we are satiated with images and in the search of counterbalance for them. There is an emerging need to experience things through other senses than eyesight, tactility!

– Elina Helenius

“People want adornment; this fact will surely always persist!

– Johanna Gullichsen



2.1 | Écomusée du pays de Rennes, France, by Agence GUINEE*POTIN. Image: GUINEE*POTIN

Authenticity – that is what people are looking for from experiences!

As a counter trend towards the world of technology, its increasingly automated living environments and all-encompassing digital content, there is a need to **return to more down-to-earth milieu**. Paying tribute to locality, Human Touch on the Rise makes a clear distinction from Functional Future by strongly emphasizing the **regional origins and permanent features** instead of global aesthetics and changing content. There is a longing for safety and stability instead of the 21st century ideal of nomadism and global citizenship. Disregarding cosmopolitanism, people reinforce their **sense of individuality through belonging** to designated communes and fragmented subcultures. This is reflected to buildings as a physical extension of sociology. By endorsing personalized aesthetics, Human Touch on the Rise questions the idea of constant, homogenous cityscape.

Human Touch on the Rise is not afraid to take a stance in its environment! Instead, it aims to provoke feelings through **visual storytelling**, communicating directly about the use of a building. Celebrating locality and originality, the history of the venue, national characteristics and cultural heritage are utilized as motifs for modernized design adaptations. The search of authenticity is raising the **appreciation of traditional materials and building techniques** as well as quality craftsmanship. These techniques are updated into industrialized processes for more cost-efficient end-solutions, which still convey a **sense of handicrafts and historical continuum** in the expression of architecture. **Artist co-operation** is often featured in the design process, and art is seen as a vital component of the entity to underline the uniqueness and involvement of humane touch. This blurs the borders between art and architecture with the two disciplines merging closer together towards a truly symbiotic entity.

In the effort of creating more 'real' experiences, Human Touch on the Rise brings about the **renaissance of three-dimensional surfaces**. The variation of surface depth generates a profound perspective to the surface, as the interplay of light and shadow generates a new visual dimension to the design. The bold surface textures offer new effects depending on the distance of the viewer; abstract patterns from afar, formed out of figurative motifs from close. These design solutions are not only to be watched, but to be approached through the **sense of touch** as well. In concrete solutions, the rough, grainy and unpolished surfaces embrace new insightful aggregates. The multidimensionality can be created by using ingredients from the local district such as gravel, or through upcycling by incorporating components like recycled glass or ceramics – both means working as a way to communicate the story behind the end-product, but also as a positive argument of the growing awareness of sustainability.

Human Touch on the Rise introduces a **revised concept of luxury and premium**, the key words being slow, hand-built, and traditional. The appreciation of integrity in materials allows the surfaces to transform over time according to the natural qualities of the substances and environmental conditions. Patinated surfaces, such as copper and roofing shingles, reinforce the sense of time and connect the building to a wider continuum of architectural culture, rejecting visual newness as the standard of desirability and luxury. Here, **organic components** make their way into stone materials by blending into the concrete and creating warmth, tactility and graininess. Containing textile fibers or chips of wood, these solutions give the concrete random, softer and cosier finish, suitable particularly for the interior use.

Trend Drivers

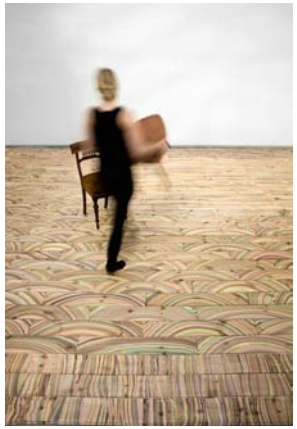
resistance towards digital solutions
desire of authentic experiences
sense of communality
search of safety
slow life
appreciation of craftsmanship & tradition
humanity
desire of uniqueness
visual storytelling
upcycling
respect of immutable premium materials

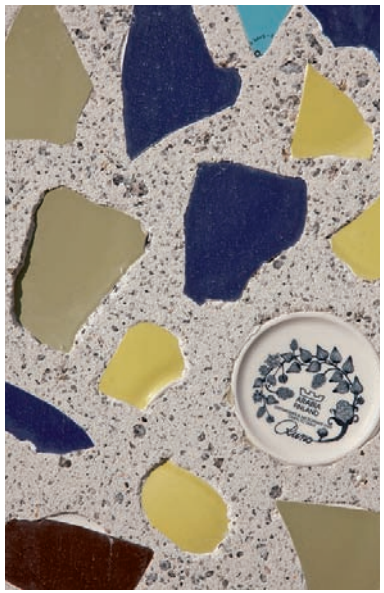
Implementations

tactile experiences
techniques derived from arts & crafts
materials with history
use of traditional building materials
use of exclusive materials
art integrated into architecture

Features

organic textures
multidimensionality
interplay of light & shadow
reliefs
robust surfaces
local ingredients
authentic organic materials
high-touch products
recycled components
human handprint
figurative illustrations
iconography
interpretations of traditional ornaments
symbols as motifs
unique designs





2.2 | Marbelous Wood
by Pernille Snedker Hansen
image: Stamers kontor
Design parquet treated with an old marbling technique. The applied decoration engages in a dialogue with the natural growth rings of the underlying wood, creating an organic, colorful and vibrant pattern.

2.3 | Vintage Belt Floor Mat
by Inghua Ting
image: Ting
Handmade floor mat using recycled vintage leather belts. The rich tones, textures, and patina evoke the look of a worn wood floor.

2.4 | Het Entreehuis, Netherlands
by Arjen Reas
image: Kees Hageman
A family home merging contemporary design with low-tech, craft-based building methods. The dense thatch, which would traditionally have been used to cover the roof in combination with walls of stone and clay, is here applied to every surface of the exterior. This modern interpretation creates a more refined aesthetic; the roofline almost converges with the landscape, grounding the building in its environment.

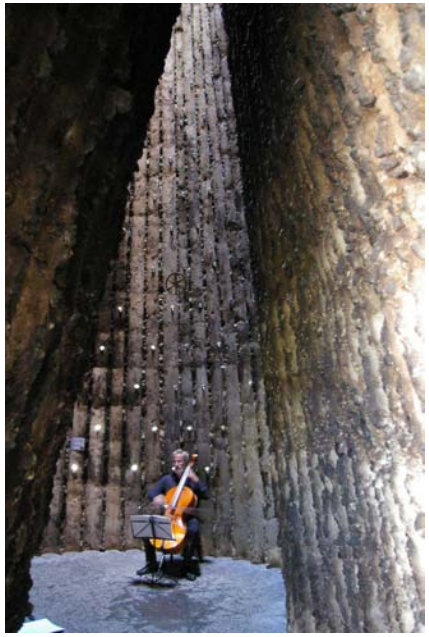
2.5 | 9/10 Stock Orchard Street, London, UK
by Sarah Wigglesworth Architects & Jeremy Till
image: Wigglesworth & Till
More commonly known as 'The Straw Bale House', the building uses a number of technologies based around the principles of sustainable design. These include a system of walling incorporating straw bales, recycled concrete used in gabion cages and cement bags (featured in the image). These bags are filled with a mixture of sand, cement, and lime, left to harden in the building frame. The fabric bags are allowed to decay over the years, eventually revealing a rippling wall of concrete with the rough imprint of cloth.

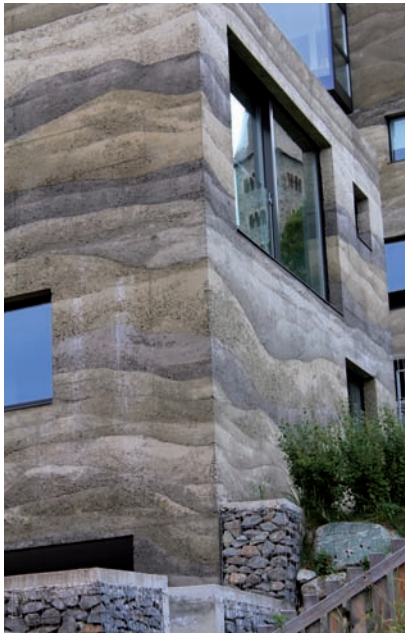
2.6 | Helsingin Flooranaukio, Finland
by Heikkinen-Komonen Ltd.
image: Heikki Aapro
The facade of the appartment building is dominated by large scale mosaic patterns. The fragments of ceramics are residue material from the local Arabia factory.

2.7 | Théâtre of Saint-Nazaire, France
by K-architectures
image: Luc Boegly
The theater is situated near the remnants of a neoclassical train station destroyed in World War II. The concrete facade is stamped with a perforated and relief floral pattern, derived from motifs mimicing a 17th century silk textile. The same pattern appears also in the interior surfaces, creating an overall visual theme for the building. This adorment pays respect to the station and links it to romantic theatres.

humanity
tactile experiences
art integrated into architecture
multidimensionality
robust surfaces
human handprint
unique designs

2.8 | Brider Klaus Kapelle, Wachendorf, Germany
by Peter Zumthor
image: Tarja Nurmi, Betoni journal
The interior space of the chapel has been created by stacking spruce logs tightly against one another, and covered by 24 layers of concrete poured in stages using a formwork that determined the form of the external frame. The logs were set on fire and allowed to burn completely, leaving negatives that create the cave-like interior space and organic, highly three-dimensional surfaces.





desire of uniqueness
organic textures
local ingredients

2.12 | Wohnuberbauung Giardin, Samedan, Swizerland
by Mierta & Kurt Lazzarini Architekten
images: Heikki Aapro
Cast-on-site concrete walls feature segments of aggregate with diverse roughness and hue. The design creates a robust, down-to-earth surface to the appartment building.

sense of communality
organic textures

2.9 | Marne-la-Vallée Central University Library, Paris, France
by Beckmann-N'Thépé Architectes
image: Olivier Amsellem
The university campus is located in the Ferme de la Haute Maison, a 17th century historic site. With a facade made from 'earth-like' bulk-dyed architectonic concrete, the library creates a dialogue alongside the original farmhouse and outbuildings.

authentic organic materials
high-touch products

2.10 | Surface design on concrete
by Line Kramhøft
image: Line Kramhøft
In an art project cooperating with local concrete developers, the Danish textile artist has created an interdisciplinary collection of concrete surface designs. The experimental designs include techniques and materials combining concrete with textile prints, and mergers with fragments of metals and organic substances, such as chips of wood (featured in the image).

upcycling
recycled components

2.11 | Vetrazzo recycled glass surfacing
by Tuo Sogno Design Center Inc.
image: Tuo Sogno Design Center Inc.
The material combines over 85% recycled glass with a binder of cement, additives, pigments and other recycled materials, and can be used in destinations instead of natural stone. As the glass comes from neighborhood curbside recycling programs and other sources post-industrial usage, the brand markets itself with a well-suited slogan ' A story in every surface'.

visual storytelling
techniques derived from arts & crafts
materials with history
authentic organic materials

2.13 | Awaji Yumebutai, Westin Resort, Japan
by Tadao Ando
image: Ken Conley/kwc.org
The complex of conference center, hotel and memorial of the 1995 Great Hanshin earthquake is dominated by concrete. It is landscaped to the scenery by using decending hillside gardens, flowing water areas and organic detailing, such as embedded sea shells on the amphitheatre floor (featured in the image).

multidimensionality
robust surfaces

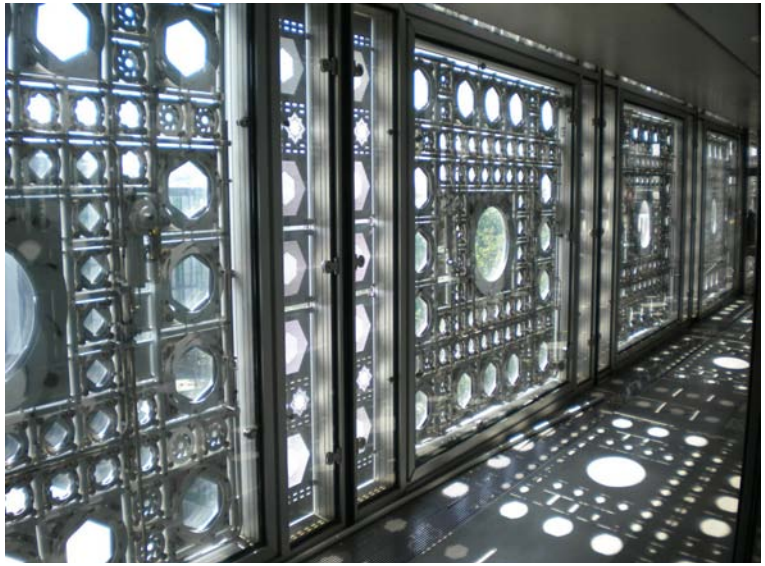
2.14 | Exhibition booth of Rieter, Swissbau, Switzerland
by Boris Egli, L3P Architects
image: Sabrina Scheja
The German glassfibre-concrete manufacturer displays its product, Sculptural fibreC, on the surface of the exhibition booth. The prefabricated moulded panels feature both organic reliefs and perforation.

visual storytelling
symbols as motifs
unique designs

2.15 | House of Knowledge sculpture
by Jaume Plensa
image: New Poetry Forms
Among his other production, the Spanish Catalan artist has created a series of cast iron sculptures, incorporating relief text with the element of light. Often through the use of direct written context, Plensa underlines the straightforward messages and communicative approach in his work.

art integrated into architecture
interplay of light & shadow
interpretations of traditional ornaments

2.16 | Institut du Monde Arabe, Paris, France
by Jean Nouvel
image: Erin
The facade of the institute complex is ornamented by a rich optical brocade, strongly but abstractly evoking the beautiful patterns of traditional Arabian weaving. This stainless steel curtain also functions as a solar-activated mechanical sun screening system.



multidimensionality
robust surfaces

2.17 | Polyforum Cultural Siqueiros, Mexico City
by David Alfaro Siqueiros
image: Sébastien Lucas
The wall of the cultural, political and social facility couples a concrete wall structure with an external iron net texture. By casting a shadow to the wall, it creates a third visual layer to the surface. The iron veil is allowed to rust, which underlines the precence and tactility of the overall design in the venue.

respect of immutable premium materials
use of exclusive materials
reliefs

2.18 | Arabesque tiling design
by Zaha Hadid for Citco
image: Citco
In a collaboration with an Iraqi artist, the Italian tiling company has created design collection featuring also motifs inspired by traditional Middle-Eastern ornaments. In this exclusive design, the wall tiling forms a marble relief with embedded LED lights.

desire of uniqueness
art integrated into architecture

2.19 | Concrete Lace curtain
by Doreen Westphal
image: Doreen Westphal Studio
Challenging the perception of a heavy-weight, earth-bound material, the designer offers a new insight on concrete, incorporating it with images, motifs and uses more familiar from the field of textile design.

tactile experiences
high-touch products

2.20 | Tuftit furniture
by Partisans
image: Partisans
Custom piece furniture offering a new interpretation on traditional tufted leather furniture. Through computer-aided milling technique, the traditional forms are transformed into diverse materials, such as wood, foam and marble, creating more contemporary, organic and varied surfaces.

sense of communality
search of safety
slow life
appreciation of craftsmanship & tradition
humanity
techniques derived from arts & crafts
interpretations of traditional ornaments

2.21 | La Fence, Netherlands
by Joep Verhoeven, Studio Demakersvan
image: Studio Demakersvan
Almost literally knitting together embroidered wire with industrial fencing, the Dutch design house combines the old, small and crafted with the new, large-scale and industrial. Lace fence is a customizable high-end metal fabric for outdoor and indoor use, suitable for applications like fencing, staircase railings, room dividers, to balcony railings and building facades.

Tech Goes Organic

Emerging Trend 1

“Combining high-end materials and digitalism will be the ’killer application’ of the future.

– Antti Ahlava

“Environmental coordination is going to become more common in architecture.

– Anna Kronlöf

“If a facade could somehow continue to its surroundings, stream to the ground…That would be interesting!

– Heikki Ruski

“The driving force behind the renewed interest in adaptable architecture is the technologically influenced and changing patterns of human interaction with the built environment.

- Fox, Michael; Kemp, Miles (2009). Interactive Architecture. New York: Princeton Architectural Press, p. 18.

“There are new activities that are performed outdoors – people won’t live at home anymore!

– Liisa Ilveskorpi

3.1 | Orto Living Covering by Kriszta Balázs, Ivanka. Image: Ivanka Studio and Concrete Works

Discrete rather than argumentative, adaptive to its environment instead of modifying it.

Tech Goes Organic differentiates from Human Touch on the Rise by **conforming to the location**, not underscoring it through design. At the same time, it is less performance-driven than Functional Future, addressing people more as 'participants' instead of calling them 'users'. Tech Goes Organic creates a **dialogue between the built environment and its natural location**. The objective is to contribute to more sustainable environment by adjusting the building to its surroundings. Through this merger, 'blurring', the focus of the building is less on its contemporary aesthetic style, making it less likely to be considered outdated, and subsequently under the risk of demolition. The influence of environmental values is strongly present in aesthetic style of Tech Goes Organic, which **embraces green spaces** not only as recreational areas, but also as components of the building as such. This is reflected also into the surfaces, which are now allowed to become covered with natural patina due to the organic growth.

The other significant motive of Tech Goes Organic is the rising demand for urban environments to evolve according to the changing user needs. Along with the global megatrends of urbanization, demographic changes of aging population, and informality replacing hierarchies, there is a growing **need for user interaction and accessibility** regarding the built environment. Diverging from formal order of conservative planning, the new trend offers more **participation and heightened sense of attachment** for people in terms of their habitat. The built environment has to respond to trends such as urban agriculture, growing amount of local services, co-ownership of commodities, shifts in transportation toward walking, cycling and public transit, and human well-being in general. Overall, the more in-depth sense of sustainability is reaching consumers, making them active stakeholders of sustainable neighbourhoods, communities and cities emerging through co-creation and participation. Also, there is a new concept of what a city should look like, as the urban milieu has more of the ‘rural’ and the ‘regional’ in it. This puts more emphasis on the public planning in architecture in terms of producing more **creative, inspiring and incentive environments and designs**.

Technology is also an important contributor to sustainable lifestyles. Evolving from the automatized buildings in Functional Future, the emphasis is shifting towards **holistic solutions and soft technologies** combining both artificial and organic features. These self-governing systems interact with not only the user, but are able to respond to the external conditions and long-term changes in their environment, as well. By detecting changing weather conditions and reacting to carbon dioxide and air pollutants, architectural space has a true communicative capability. It creates a mutual relationship between inhabitant and habitat: spaces influence human behaviour as much as they are then, in turn, conditioned by the inhabitants. Also, the role of **kinetic architecture** is prominent, creating both interaction with the environment and a visual effect, but affecting also in the level of building performance as well.

The visual style of Tech Goes Organic pays tribute to the organic world, taking **inspiration from figurative elements found in nature and biomimicry**. Biomimicry provides understanding of the process by which organisms grow and develop, and these features can be adapted into architecture. The drive is for more **fluid and effortless expression**, mixing organic materials and motifs to a clean, contemporary design language. As a mediator between firm and flowing elements, there are composite facades constituting from functional wall structure and an aesthetic veil that covers the building. In terms of graphics, Tech Goes Organic favours **informal patterns and randomness** in the use of figurative motifs. The main emphasis, however, is on the non-figurative images and textures, which are wrought from their original models into more **abstracted designs**. Instead of multi-coloured surfaces and prints, the preference is strongly towards monochromatic textures and use of reliefs or other three-dimensional illustrational techniques.

In terms of concrete, the emerging demand is for maintenance-free, durable solutions suitable for traffic routes, yard panels and other destinations exposed to heavy usage. The incorporation of plants and other organic components offer possibilities to develop targeted products for planning and environmental architecture, such as planters, tiling solutions, outdoor fitments and vertical gardening panels for public environments.

Trend Drivers

eco-luxury
sensitive science
biomimicry
biotechonology
responsiveness to natural landscape
sensitivity to place
aging societies
accessibility
user-driven design
urban informality
growing environmental consciousness

Implementations

interactive buildings
flexible spaces
kinetic facades
camouflage
landscaping
recreational green spaces
environmental art
self-healing composites

Features

adaptability
organic forms
flowing shapes
liquidity of design
artificial topographies
combination of organic & artificial components
building-integrated green spaces
nature inspired graphics
'less is more'

3.2 | Natural Footprint 'living surface' concrete
by Alessia Giardano
image: AG Studio
Responsive and interactive surface panels combined of laser-cut wood and concrete base. The patterns formed out of the organic components transform during the product life-cycle by distorting and creating a temporary 3D element. After peeling off and decomposing, the end-result is a lace-like effect as a permanent trace in the concrete surface.

3.3 | Double Agent White installation
by Marc Fornes, Theverymany
image: Theverymany
As part of a series of prototypical architectures, the aluminium installation presents a continuous surface composed of an intersection of 9 unique spheres, achieving a maximum degree of morphological freedom with a minimum amount of components.

3.4 | Obstgarten auditorium & library, Stäfa, Switzerland
by e2a architekten
image: Radek Brunecky
Renovation of the building. The 1970's concrete blocks received an aesthetic and energy efficiency makeover with an organic pattern derived from a photo of the bark of an apple tree. The motif refers to the original function of the area as orchards, while the relief makes the monolithic concert hall volume appear lighter, as well as tactile.

3.5 | Green Cast, Odawara, Japan
by Kengo Kuma
image: Kengo Kuma
The wall of this multi-purpose building is populated with plants, thus reconnecting the architecture with nature. The planters are comprised of aluminium die-cast panels, made in monoblock casting. Equipment such as piping delivering rain water, air reservoir for ventilation and downpipes are installed behind the panels, creating comprehensive system for the facade maintenance, and keeping the whole structure organic and alive.

3.6 | Luminoso Transparent Wood
by LUMINOSO
image: LUMINOSO
Transparent effect is created by embedding fiber optics between solid wood lamellas, which allow light to be transmitted. The wood panels can also be included with custom-designed graphics, appearing from the solid surface only when exposed to light.

3.7 | Wood Casting Furniture
by Hilla Shamia
image: Hilla Shamia
A collection of furniture fusing damaged materials, such as burnt wood, with cast in-situ aluminium. The design combines organic materials with abstract forms, which intensifies the artificial feeling, but at the same time maintains the organic texture and conveys the spirit of the material.

accessibility
user-driven design
growing environmental consciousness
flexible spaces

3.8 | Carabanchel Housing in Madrid, Spain
by Foreign Office Architects
image: Francisco Andeyro Garcia & Alejandro Garcia Gonzalez
Modulating to light, wind, and water, the folding screens encompass the whole facade. This gives the building an ever-changing look, as each occupant modifies their space according to their own needs. Created from small bamboo rods in a metal frame, the handbuilt nature of the pieces gives the facade a strong, organic texture.

eco-luxury
responsiveness to natural landscape
aging societies
camouflage
environmental art
'less is more'

3.9 | Seeyou Gravestone
by Ákos Maurer Klimes & Péter Kucsera
image: Ivanka Studio and Concrete Works
Made of poured concrete, the 'Seeyou' gravestone allows the weather and seasonal changes to transform the look of the object, cretating natural interaction between the site and the design.

sensitivity to place
aging societies
camouflage
landscaping
nature inspired graphics

3.10 | EDF Archives Centre, Bure, France
by LAN
image: Julien Lanoo
Despite of its volume, the archives building of the nuclear energy company manages to merge with its environment. The earth tone colours and coarse-grained concrete are teamed up with a pattern, which is produced by arranging stainless steel studs into the concrete moulds. The pattern imitates the skin of a chamelion, and like a chamelion, the facade reflects to the surrounding colours, landscape, weather and seasons – truly blurring the limits of the building!

biotechonology
responsiveness to natural landscape
camouflage
combination of organic & artificial components

3.11 | 'Biological Concrete'
by Universitat Politècnica de Catalunya, Barcelona, Spain
image: simulation of a vegetated facade at the Aeronautical Cultural Centre in El Prat de Llobregat
An ongoing development of a new type of concrete that captures rainwater in order to create living walls of moss and fungi. Unlike the existing vertical garden systems, this concrete innovation supports growth of organisms on its own surface. The material is aimed to improve thermal comfort in buildings and help to reduce atmospheric carbon dioxide levels.

sensitive science
biotechonology
interactive buildings
adaptability

3.12 | Polluted Pattern concrete panels
by Alessia Giardano
image: AG Studio
Airborne pollution has been harnessed to create aesthetics through photoreactive materials. Designed for facades and urban walls, 'invisible' motifs are printed onto TX Active light sensitive photocatalytic white cement, which uses UV light to oxidize pollutants and adours in the air. After exposing panels to pollution, the pattern is gradually revealed over the course of time. The photocatalytic concrete is a sustainable technology, which is able to purify air by breaking down organic polluted molecules and transforming them into harmless substances.

growing environmental consciousness
building-integrated green spaces

3.13 | Vertical Living Gallery, Bangkok, Thailand
by Sansiri PLC & Shma
image: Sansiri PLC & Shma
As a joint venture with landscape architecture, the chequered facade of the showroom building is half glass and half living plants. Vertical louvers shade the windows between the green panels. In addition to the visual appeal of the greenery, the vertical garden acts as a minor carbon sink.

recreational green spaces
environmental art
self-healing composites

3.14 | Plant habitat
by asensio_mah & Harvard Graduate School of Design
image: asensio_mah & Harvard GSD
The concept of the design is to create different surfaces for different types of plants to grow, to provide protected planter spaces, shades and diverse microclimates with folding surfaces. The modular structure, assembled from 190 elements, can be taken apart and reassembled in a different configuration.

sensitivity to place
urban informality
kinetic facades
camouflage
landscaping
recreational green spaces
environmental art
liquidity of design

3.15 | Brisbane Airport, Autralia
by Ned Kahn, Hassell Architecture & UAP
image: UAP

The kinetic facade of the eight-storey car park appears to ripple fluidly as the wind activates 250,000 suspended aluminium panels. The intallation creates a direct interface between the building and its natural environment as it responds to the patterns of the breeze and reflects the surrounding colours. In addition, the art piece includes a graphic element, as the perforated and anodized panels render a photograph of a mast of a sailing ship reflected in water. The translucend facade is 50% permeable, allowing ventilation for the car park's fumes, and functions also as a sun shade, cooling the entire structure.

sensitivity to place
landscaping
nature inspired graphics
'less is more'

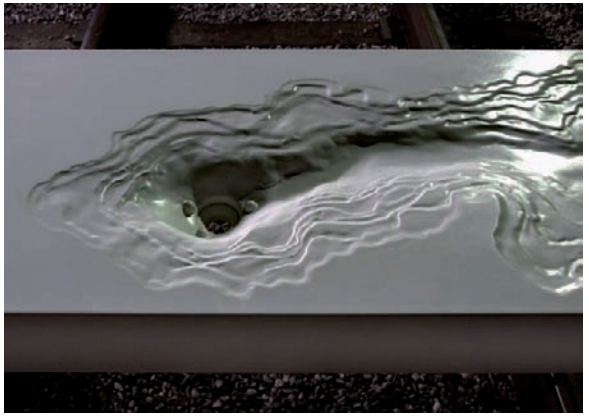
3.16 | Laposa winery, Badacsonytomaj, Hungary
by Péter Kis
image: Zsolt Batar

Aspiring to modernize the vineyard, the facilities of the press house are situated mainly below the ground. The simplistic architectural shape of the visible parts pay respect to the silhouette of traditional press houses, with facades dominated by a discreet grapevine-inspired pattern. The precast concrete panels are imprinted with a relief version of the motif, which continues on the perforated metal sheeting, maintaining the surface unity.

urban informality
environmental art
liquidity of design
artificial topographies

3.17 | Tsunami Urban Furniture
by Nikolaus Wabbnitz & Xu Feng
image: WAX Architects

The design language of the public furniture object flows between sharp corners and soft waviness. Taking inspiration from nature, Tsunami creates a spatial transformation from the hard elements to the fluid formation, changing the users' tactile experience through a topological transformation.



biomimicry
organic forms

3.18 | Dragon Skin Pavilion
by Emmi Keskisarja, Pekka Tynkkynen & LEAD
image: Pekka Tynkkynen

The digitally fabricated plywood installation challenges and explores the spatial, tactile, material, and manufacturing possibilities of contemporary architecture. The porous skin creates a reptile-like structural ornament, forming the repetitive framework of the rectangular panels and their gradually irregular interconnections. Together, they configure the overall shape of the pavilion.

combination of organic
& artificial components

3.19 | Fifty-Four-Fourty Products of Geography
by Mette Hornung Rankin & Greg Jones
image: Nicolle Clemetson

A set of laser carved magnets inspired by topographies of the US states, each piece forms an abstract entity of its own. Plywood material creates a warm contrast to the machine-made surface structure.

sensitive science
biomimicry
organic forms

3.20 | Cellular chair
by Mathias Bengtsson
image: Mathias Bengtsson

Composed of light-weight epoxy, the piece of furniture is designed based on the growth principles of human bones. Adopting the appearance of an organic form, the interior geometric structure is determined uniquely for each piece by a computer program simulating the regeneration of bone tissue.

flowing shapes
liquidity of design
nature inspired graphics

3.21 | Lusto carpet
by Studio Elina Helenius production
image: Mika Mahlberg

The timeless design of the jaquard woven cotton carpet evokes stylized images of landscape topography, rippling waves, and growth rings ot the trees.

eco-luxury
biomimicry

3.22 | Erosion Sink
by Core Design Co.
image: Core Design Co.

The artisan studio, specializing in custom concrete surfaces and interiors, has created a series of design sinks by mimicing the shape of the erosion pattern encarved by water.

Textile Takeover

Emerging Trend 2

“In the world of fashion(…) things move faster than in architecture – getting dressed, getting undressed, transforming oneself, giving shape, trying new sculptural possibilities, examining the quality of surface texture, inventing a new style, and discarding it again.
– Garcia, M. (Ed.). (2006). Architextiles (Architectural Design Journal Nov/Dec) (Vol. 76 (6)). London: Wiley-Academy.

“I would like to make woven facades.
– Outi Martikainen

“How could concrete be rolled up, combined with an elastic material?
– Pertti Kukkonen

4.1 |Textile Field Installation by Ronan & Erwan Bouroullec in collaboration with Kvadrat, The Victoria And Albert Museum. Image: Studio Bouroullec & V&A Images

Speed and variability, these are the key words when talking about Textile Takeover!

Conventional architecture is too slow to keep up with the accelerated pace of changes in society, culture, and aesthetic trends. Traditionally, facades have been seen as the non-variable element in buildings, as the ideal of architecture has been to withstand time. Simultaneously, interiors have always been more customizable due to the changing user needs. Therefore, when developing solutions for more current **multifunction design**, the interior scale is a valid domain. By borrowing elements and methods from interior architecture, textile design and fashion, Textile Takeover challenges the idea of static architecture and single-function spatial design with fixed solutions set for life. The new approach shifts the focus from permanent, durable, and hard to more **adaptable, interactive, variable, dynamic, and user friendly architecture.**

Soft, flexible, continuous, variable, woven, latticed, folded, adaptable, translucent, tensile, pneumatic, pleated, creased, knotted, porous, veiled, elastic, plastic, supple, knitted, draped, flowing, patterned, cosy, fashionable, lighter, faster, smarter, colourful... With vast range of features available, textiles offer **more tactility** than conventional construction materials. Therefore, the focus of the trend turns away from figurative designs and performance abilities of materials, and takes inspiration instead from **textures, rhythms of abstract patterns and diverse surface treatments**.

The new flexible approach is parallel to **styling**, a method well known in the field of textile design. By combing various textures, colours and patterns, the emphasis is on the coordination of materials and creating fresh assortments, allowing the designer to play with different surface features in the same project. Why is styling so intriguing, then? The main driver is **homing**, the desire to create cosier, more humane and approachable spaces focusing on the atmosphere of the venue. Again, there is the search of uniqueness as an underlying motive, but now as a new factor, the role of designer is shifting from the architect towards the end-user, who is actively involved in sculpting their own environment. Interior surfaces are integrated with new modular functions, such as storing units, foldable worktops and seating arrangements. Also, the **space is treated as a platform for changing activities**, so there is a need for temporary, movable divider elements combining functionality with visual attractiveness. The **user-empowered design** does not only cover the interiors, but expands to the exterior skin, as well. Here, the textile approach works as a link by connecting the inside with outside through textile surface, a motif or a theme, obscuring the borders of residential space.

The default feature of all product design in Textile Takeover is user friendliness, preferably **allowing the end-product to be compiled from modular elements**. The change of visual appearance is enabled by easy-to-use, ready-made components, such as curtain solutions and interchangeable tiling elements. In terms of patterns, textile has been transmaterialized into stone. Instead of the bold, large-scale illustrative approach of Human Touch on the Rise, Textile Takeover is into small patterns, primarily textures and reliefs taking inspiration from textile surfaces and structures. The textures are used as a means to fade out unwanted details and structures of the building surface, e.g. the visible division of concrete elements, or transforming monolithic entities to a more **approachable, humane scale**.

Use of colour has a prominent role in Textile Takeover. Colour is a simple yet an expressive tool, central tool in fields of design industry, effectively altering the appearance of an object, an interior or a larger architectural entity. A distinctive look is created by combining geometric colour blocks with discrete surface treatments, such as rough grain structure with smooth, polished segments in concrete. Along with the bright, intense pigments in aggregate, there are also the more sophisticated, sedate hues realized by using a glaze on the concrete surface. By incorporating features like water-repellence and light-weight elements re-enforced with fibre technology, use of colour is a significant opportunity for concrete as a material to get a stronger foothold in the field of interior design. There is also a **strong market potential for business-to-consumer design solutions**.

Textile Takeover teams up with lighting design, which allows the mood and focus of buildings to be varied and accentuated in a flexible way. Use of lights not only ignites the colours, but also brings the best out of the three-dimensional reliefs of surface textures.

Trend Drivers

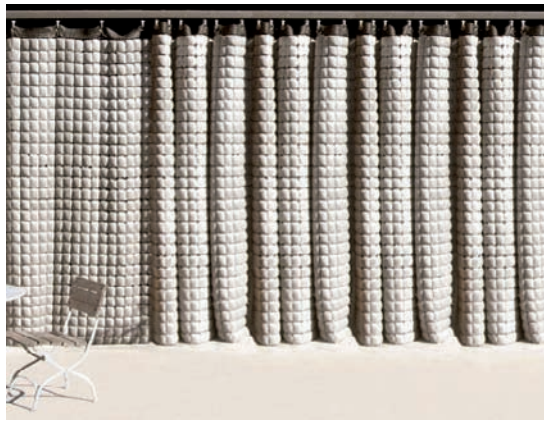
motile architecture
kinetic architecture
architextiles
interior architecture influences
homing
end-user powered design
styling

Implementations

temporary design elements
blending of materials
tapestry applications
custom-tailored product variants
turnkey solutions
colour assortments
tiling solutions
exchangeable panels
textile space dividers
fabric-formed environments
indoor-outdoors

Features

modularity
motility
anonymous ornamentation
use of colour
glazing, polished concrete
interplay of hard & soft materials
textile textures in reliefs
perforation
playfulness



4.2 | Randall Museum, San Francisco, US
by Charles Sowers
image: Charles Sowers
In the kinetic installation 'Windswept', the entire facade of the art museum is covered in weather vanes. The spinning blades do not uniformly point in the same direction, but rather show smaller diverse patterns and paths of the breeze, forming a ever-changing motion reflecting the interaction between the site and the wind.

4.3 | Concrete Curtain
by Memux architectural design
image: Memux
The curtain consists of concrete elements gathered on a flexible mesh, creating a geo-textile. Here, concrete has been translated into a piece of textile architecture. The soft, variable character is increased through the refracted light, its movement in the wind, and the sounds resulting from it. The Concrete Curtain functions as sun- and windscreen, privacy screen, façade element, or heat-accumulating room partition.

4.4 | Bent, Amsterdam, Netherlands
by Chris Kabel & Abbink X de Haas architects
image: Jan Peter Föllmi
The house and studio is wrapped with a facade of aluminium sheets with perforated hexagon sections. The flexibility of the structure allows the surface to catch the light and cast a shadow like a hanging sheet of fabric, creating a textile feeling to the skin. The exterior relates to the history of the area, which is associated with the textile industry of the 16th and 17th century.

4.5 | OUT Outdoor Unconventional Textures
by Giovanni Pagani for Wall & Decò
image: Wall & Decò
The Italian wallpaper company has launched a wallpaper collection designed for the outdoors. Consisting of three-part covering system of an adhesive, a technical fabric and a finishing treatment, the technique enables photographic reproductions and large-scale graphic designs to be applied onto outside walls.

4.6 | Concrete Velvet Wall
by Trish Belford & Ruth Morrow, Tactility Factory
image: Tactility Factory
Bringing textile thinking and technologies to concrete manufacturing, Tactility Factory expands the potential of concrete from a cold, grey, acoustically harsh and unappealing to warm, colourful, acoustically soft and appealing substance. TF skins are created with a substrate layer of Glass Reinforced Concrete, and can be manufactured to a variety of sizes to fit specific spaces. TF skins can be applied to existing interior wall surfaces, used within decorative elements or products, or integrated into other precast concrete elements.

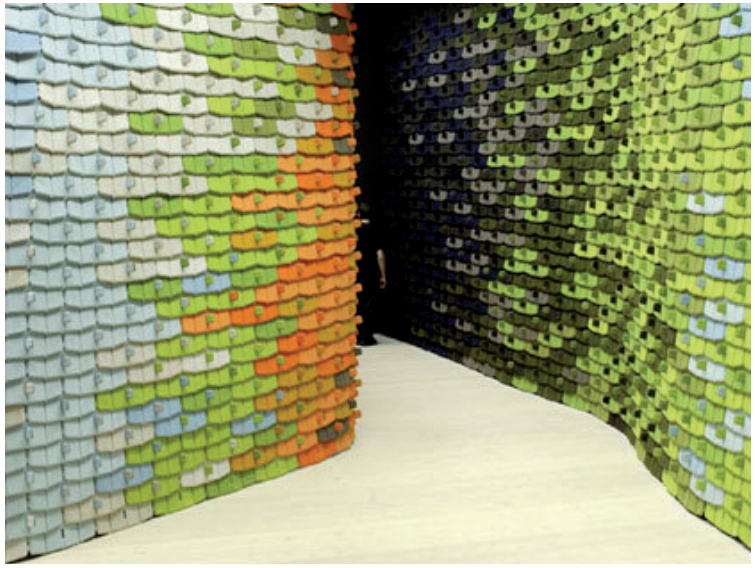
4.7 | Cristallino agglomerate tiles
by Trend Group S.p.A.
image: Trend Group S.p.A.
Made by using up to 70% post-consumer glass together with a small amount of coloured polyester resin, the collection offers a wide range of colours for tiling solutions both for indoor and outdoor use.

architextiles
blending of materials
fabric-formed environments
motility
interplay of hard & soft materials

4.8 | Fabric Facade, Netherlands
by CC-Studio, Studio TX & Rob Veening
image: John Lewis Marshall.
In a collaboration with the artist and resident himself (Veening), the facade of the house is covered with strips of Teflon coated fiberglass fabric. The material is residual waste from tent industry. Placed as overlapping perforated shingles, the textile moves with wind, creating a lively image.

motile architecture
architextiles
end-user powered design
temporary design elements
blending of materials
custom-tailored product variants

4.9 | Concrete Canvas
by Concrete Canvas Ltd.
image: Concrete Canvas Ltd.
Created originally for easy-to-mount Concrete Canvas Shelters in disaster relief, the material called Concrete Canvas consists of cement layered between fabric that can bond with water, backed with PVC. The flexible fabric technology can be formed into any required shape, then allowed to absorb water, causing it to set after two hours.



tiling solutions
use of colour

4.10 | Sumatrakontor, Hamburg, Germany
by Erick van Egeraat
image: J. Collingridge
Using red sandstone, the mixed-use block refers to the red-brick harbour aesthetics of the nearby historic Speicherstadt. Mixed with glass and aluminium, the outer façades facing the streets are predominantly composed of natural stone. The overall appearance is dominated by colour composition of red vertical stripes, gradually shifting to shades of white. The facade's main entrance parts like a pair of red curtains.

interior architecture influences
fabric-formed environments
indoor-outdoors

4.11 | Aichinger House, Austria
by Hertl Architekten
image: Kurt Hoerbst
The entire building is covered with and external textile skin fabric structure, creating a soft, indoor-like curtain effect. The textile wrapping makes it possible to alternate the building appearance, and to adjust the amount of daylight with the partings in the facade corresponing the windows. Similar to regular indoor curtains, the curtains can be drawn closed to provide shade and diffusion of light.

motile architecture
architextiles
interior architecture influences
end-user powered design
styling
turnkey solutions
colour assortments
exchangeable panels
textile space dividers
fabric-formed environments
modularity
motility
use of colour

4.12 | North Tiles textile panels
by Ronan & Erwan Bouroullec for Kvadrat
image: Kvadrat
North Tiles is a system of foam core building blocks with a fabric cover, which can be assembled into a wall, decorative element or room divider. Also, the textiles have a sound-absorbing effect. The sections are connected by a simple folding system, allowing the entity to be divided and put together again. In their website Kvadrat provides an online tool for customers to compose their individual design out of 100 colours available.

styling
tiling solutions

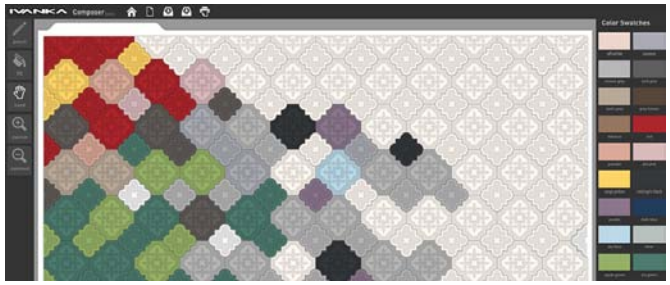
4.13 | Cool, Heerhugowaard, Germany
by Soeters Van Eldonk architecten
image: Daria Scagliola / Stijn Brakkee
For the centre art and culture, the architects drew inspiration from the local coat of arms of Heerhugowaard, featuring two herons flanking an ear of corn. The facade is covered with glazed ceramic slates as a reference to the grey plumage of herons. The slates form an abstract, non-repetetive pattern with a sense of dynamic movement to the surface.

architextiles
tiling solutions
fabric-formed environments
interplay of hard & soft materials
textile textures in reliefs

4.14 | Folded Concrete panels
by Alessia Giardino
image: AG Studio
Suitable for external façades and interior spaces, the concrete panels are folded to look like a wrinkled fabric cloth. The image of plated surface gives the impression of a structured, yet movable environment.

styling
custom-tailored product variants
turnkey solutions
colour assortments
tiling solutions
indoor-outdoors

4.15| Flaster tiles & Flaster Composer application
by Andras Rudolf
image: Ivanka Studio and Concrete Works
Suitable both for foors and walls, exteriors and interiors, domestic and public use alike, the Flaster combination tiles are made of fiber reinforced high performance concrete. The ornamented tiles are available in standard and custom colors, and the customer is able to design their own composition by using the producer's online application.

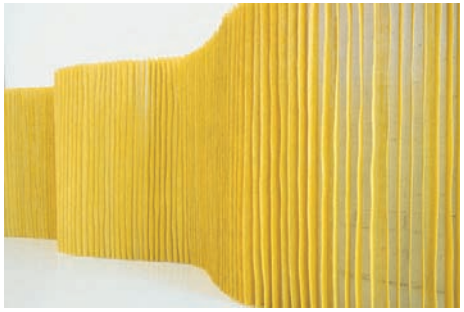


use of colour
playfulness

4.16 | Kuggen, Gothenburg, Sweden
by Wingårdth Arkitektkontor
image: Wingårdth Arkitektkontor
The circular facade of the a sustainable office building is made of glazed terracotta tiles, featured in shingles of eight colours. The three-dimensional skewed form is inspired by the saw-toothed edge of a tree leaf. By consisting of repetitive cut-out levels, it forms a pleated structure with each floor providing shading to the storey-below.

architextiles
textile space dividers
interplay of hard & soft materials

4.17 | Scent of Lemon textile art piece
by Ritva Puotila
image: Ritva Puotila
Founder of Finnish company Woodnotes, the textile designer continues to examine the qualities of paper yarn in the unique installation. Here, the surface forms a translucent, rippling texture resembling corrugated cardboard, merging with the larger wave-like rythm of the installation structure. Through its qualities, paper yarn acts as a mediator between textiles and the hard materials used in traditional architecture.



anonymous ornamentation
use of colour

4.18 | Tote bag by wrk-shp
by Ryan Upton & Airi Isoda
image: wrk-shp
The architect-turned-fashion designer-duo plays with contrary surface features by dipping cotton canvas in latex paint. The non-conventional way to treat a textile product creates an interesting contrast between the soft, matte surface and the shiny, more artificial one.

playfulness

4.19 | Reach Ruin art exibition
by Daniel Arsham
image: Graham Hiemstra
Displayed in Fabric Workshop and Museum, Philadelphia, the artist creates a link to how we experience the space by making materials behave atypically. Using recycled glass, ceramics, resin and life-size fiberglass figures in his installations, Arsham makes the viewer reconsider architecture, the natural world, and the manner in which they interact with each other.

homing
exchangeable panels

4.20 | Roofer lamps
by Benjamin Hubert
image: Fabbian Illuminazione
The mini collection of design lamps using rubbery silicone scales is inspired by Moroccan tiles roofs. The machine washable shingles can be detached and rearranged by the user, allowing them to transform the appearance of the product.

kinetic architecture
blending of materials
use of colour

4.21 | Museum Brandhorst, Munich, Germany
by Sauerbruch Hutton architects
image: zurika.com
The multi-coloured exterior of the museum is composed of 36,000 vertical ceramic rods in 23 different coloured glazes. Resembling an abstract painting or a woven structure, the appearance of the facade alters according to the perspective of the viewer. From close up, each colour can be seen as an individual element. From a distance, the multi-coloured elements merge into a more harmonic entity of neutral shades. Seen from an angle, the vertical rods create a solid surface, and from face on the horizontal stripes of the background become the most dominant feature.

5: Product Development Strategy for GCCollection™

The product development strategy presented in this section consists of an overview of the Graphic Concrete business model and customer segmentation, followed by the proposition for the product strategy. The information is derived using primarily the following resources:

- Graphic Concrete Communication Guidelines & Graphic Concrete web pages
- consultations with Graphic Concrete personnel
- expert interviews
- field trip to Forssa, Finland, including visits to graphic concrete membrane manufacturer & Parma Ltd concrete factory

5.1: Graphic Concrete Business Model Overview

This overview of the business model of Graphic Concrete is based on Patrick Staehler's 'Business Models in the Digital Economy' (2001). The summary of the key operations and brand elements serves as a platform for understanding the overall requirements of Graphic Concrete design management. The content of the business model is compared with the feedback from the expert interviews.

Graphic Concrete Business Model Canvas

Value Architecture

Offer

Graphic Concrete creates added value to buildings and the environment by means of graphic patterns. [1]

Value Chain

The key activities are maintenance and development of product offering, technical consulting, and production and delivery of graphic concrete membrane. The customer is able to choose the tailored design solution, receive guidance in all the phases of design and production processes, and get the physical product in the chosen time frame.

Core Capabilities

Technical know-how in concrete and construction processes with understanding architectural culture in diverse target markets.

Distribution Architecture

In the Nordic markets, Graphic Concrete operates in direct contact with the customer. In other markets, the strategy is to provide the products and services locally by means of local experts. [1]

Partners

Material agents, consultants, showrooms and concrete element manufacturers in target markets.

Value Proposition/Customer

Customers

1. Architects and designers internationally in private and public sectors
2. Concrete element industry
3. Developers with construction contractors and consultants

Customer Benefit

Possibility to create unique graphic solutions or select from ready-made designs for concrete surfaces. Competent consulting according to customer needs throughout the entire building process. The products and services are modular and can be tailored cost-effectively.

Brand Values

High-Quality Design

Patterns are the key to the appeal of graphic concrete. We appreciate the value of good design and communications. We provide services to help designers create a high-quality product. [1]

Genuine Co-operation

Flexible co-operation enhances wellbeing: we listen and make ourselves heard. We co-operate within the entire chain of construction: we provide technological support to the concrete element industry and design support to designers and architects. We market our services together with our partners. [1]

Openness

We present our products openly and pricing is easy to understand. We list our references. Our products can be tailored, and the outcome of each project is unique. [1]

Profitability

We fulfil the requirements of our stakeholders profitably without compromising the quality of service. [1]

Local Presence

We operate and provide service locally through local partners. We co-operate with local concrete element manufacturers, utilising local expertise, materials and rocks. [1]

Vision

Graphic Concrete is internationally recognised in the construction industry and an established solution among architects. We are recognised for our high-quality expertise and service. This vision is supported by precisely targeted communications and local production and distribution co-operation as close as possible to our key markets. [1]

Mission

Graphic Concrete builds a better environment with innovative products for the concrete element industry and high-quality services. [1]

Targeted Brand Image

Leading Innovator in the Concrete Business

Emphasizing customer-orientation in product development through sensitivity to customer feedback and demands, and investing in R&D and marketing activities. [1]

Born Global, Act Local

Aiming at international presence and influence, Graphic Concrete operates globally with international partners that are able to provide high-quality service to local clientele. As the area of expertise is very focused, the demand of internationality is also a vital condition. It is implemented through the effective visual communication that the brand addresses the diverse markets in all languages. [1]

Industrial Quality Projects

Being a reliable industrial architecture manufacturer, Graphic Concrete contributes to the industrial production chain by utilising repeating graphic patterns. This way, it supports and provides added value to the producters of the concrete industry. [1]

[1] Adapted from Graphic Concrete Communication Guidelines

Business Model Development Suggestions

Based on the expert interviews, the image of graphic concrete as a product solution is well aligned with the objectives described in the business model; 73 % of the stakeholders had primarily positive feedback on the end-product (Appendix: Q.2.4). The critique was addressed mainly towards 'commercialism' of the designs due to their excessive recognisability. Here, the conception of the brand could be improved through the development of GCCollection™. By emphasizing the discreet quality of the patterns suitable for global use, the collection concept could reinforce the design brand image. This would balance the image created by the more showy designs renowned from the unique building destinations. In addition, the presentation style of the GCCollection™ is in a significant role in maintaining and improving the desired direction.

The co-operation and service factors (Appendix: Q.2.6) are well acknowledged by the interviewees. However, the main obstacle before even getting to launch the service model is creating more brand awareness for Graphic Concrete, as the product and technique are not yet widely known in the targeted markets. Also, the demonstration of material quality is a challenge which, for now, does not fully live up to the value architecture and brand values.

5.2: Customer Segmentation

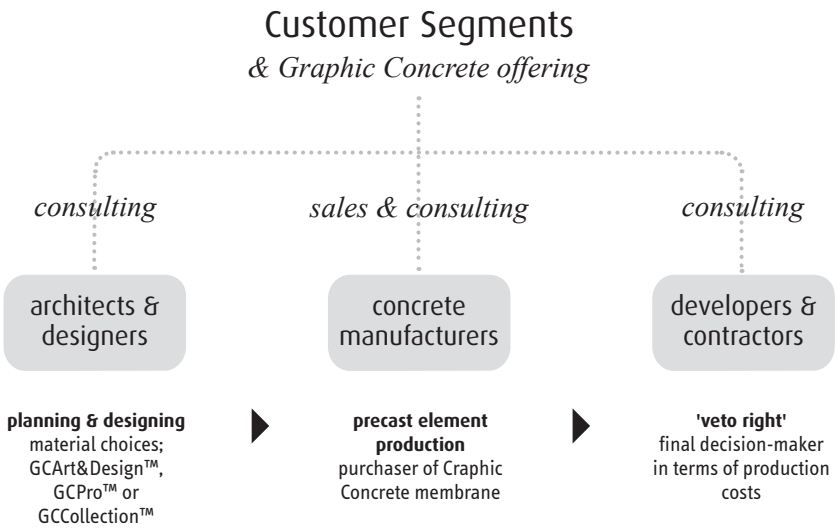


FIGURE 5.1: Customer Segments of Graphic Concrete
(adapted from the Graphic Concrete Communication Guidelines, 2012)

The featured model of customer segmentation is based on behavioural segmentation of the targeted b2b stakeholders. Graphic Concrete cooperates with the entire chain of construction. It provides technical consulting for all the parties; architects and designers in charge of design process, precast factories manufacturing the physical end-product, and developers and contractors in charge of the overall budget. The decision-making procedure starts with the architects responsible for material choices, but the developers have a great influence in the process, for in the role of project orderer, they are able to ultimately define the final level of costs. However, in terms of providing design service, all three stakeholder segments can be perceived as customers of Graphic Concrete.

Regarding the product development strategy of the GCCollection™, the main segment to consider are the architects and designers, as they are primarily liable for the visual definition of policy in a construction project. According to them, the determinant factor for the potential use of GCCollection™ is the fundamental concept of the building itself (Appendix: Q.2.4). This concept defines the need to develop unique solutions for the surface design, or alternatively to aim towards more discreet appearance (Chapter 4.2: Topography of Trends, Emphasis on Locality vs. Demand of Neutrality). Therefore, as there are three pattern categories in the Graphic Concrete Ltd offering, it is important to recognise that GCCollection™ and the two other categories should distinctly differ from each other. The GCCArt&Design™ and GCPro™ collections offer possibilities for the customers demanding individual features. At the same time, the GCCollection™ is able to provide practical, ready-made solutions for more mainstream sites. By offering an alternative, easily accessible product segment for the customers, the GCCollection™ supports the categories of unique designs and adds value to the overall customer service.

The main market areas for Graphic Concrete are the Nordic countries, with the rest of the Europe focusing on Germany, France, Czech Republic, and the Benelux countries. Also, there is interest in expanding the business to North America, Japan and United Arab Emirates. The width and diversity of potential customer base could be taken into account in the development of the GCCollection™ concept, resulting to a segmentation of the collection based on specific target market profiles. However, considering the brand life cycle with the available resources, the current operative focus is on creating brand recognition and developing sales through volume products. Therefore, it is strategically more feasible to proceed with undifferentiated marketing and a uniform collection concept.

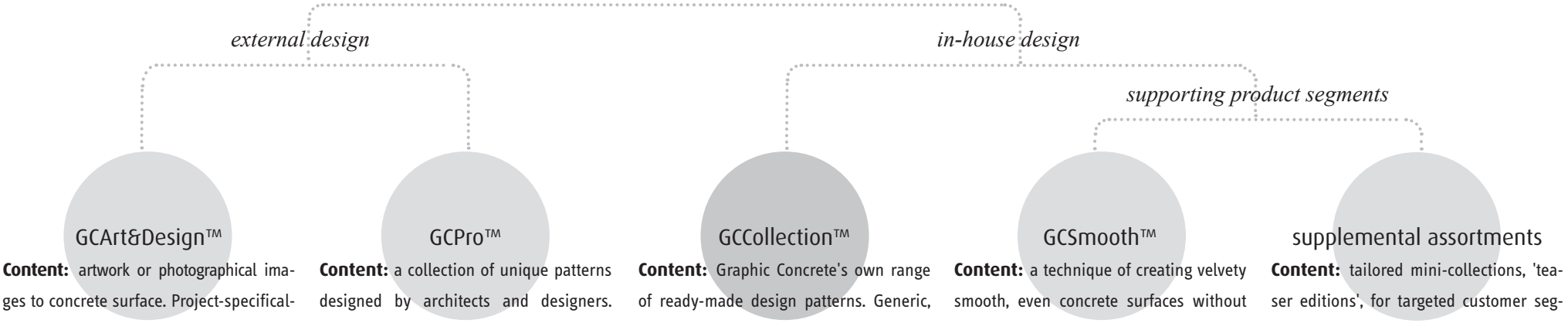
5.3: Product Strategy

The product strategy consists of the following sub-chapters:

- Graphic Concrete Product Categories
- GCCollection™ Logistic Requirements
- GCCollection™ Pattern Requirements
- GCCollection™ Collection Strategy
- Trend Adaptation for GCCollection™

The conclusions of the strategy and the instructions for its implementation are summarized in Chapter 6: Design Guidelines for GCCollection™.

Graphic Concrete Product Categories



Content: artwork or photographical images to concrete surface. Project-specifically designed by architects and designers, the designs are not available for further use and do not form a pattern collection as such.

Positioning: the 'flagship' category in terms of enabling the one of a kind design solutions and showcasing the ultimate technical potential of graphic concrete.

Content: a collection of unique patterns designed by architects and designers. These patterns are exclusive, designed to match a specific project. The immaterial rights of the designs are owned by the architects and designers, and if the pattern is chosen for a new project, the rights are bought from the designer.

Positioning: brand building by highlighting the design value through the patterns created by known professionals in the business field.

Content: Graphic Concrete's own range of ready-made design patterns. Generic, long-lasting patterns for universal use, but providing also inspiration through more editorial designs relating to current and emerging trends.

Positioning: supporting the categories of unique designs (GCArt&Design™ and GCPro™) by offering an effortless, cost-effective alternative for a construction design process. Generating sales by providing solutions for mainstream markets. Brand building by presenting conceptualized design categories and including also more provocative designs in the offering, linking Graphic Concrete to up-to-date trends through the collection.

Content: a technique of creating velvety smooth, even concrete surfaces without pattern by using a blank membrane.

Positioning: supporting the other product segments by providing a supplemental surface treatment. Combined with patterned surfaces or used separately.

Content: tailored mini-collections, 'teaser editions', for targeted customer segments. Creating assortments by combining existing patterns and surface treatments (from GCCollection™ and GCSmooth™) with customer-specific custom-designed patterns.

Positioning: a focused tool to approach potential new customers in the markets that differ from the company's basic offering by their cultural and/or aesthetic preferences, e.g. Saudi Arabia.

FIGURE 5.2: Suggestion: Graphic Concrete product categories
(segmentation, content descriptions and positioning by Anna Kuukka)

GCCollection™ Marketing Requirements

In the interviews, the stakeholders were inquired about their needs and preferences relating to the existing concept and presentation format of GCCollection™. They were also asked to suggest improvements for its future development in terms of optimal functionality (Appendix: Q.2.5). The 24 interviewees were allowed to suggest several features. This diagram presents the interview results with the number of people referring to the designated topics.

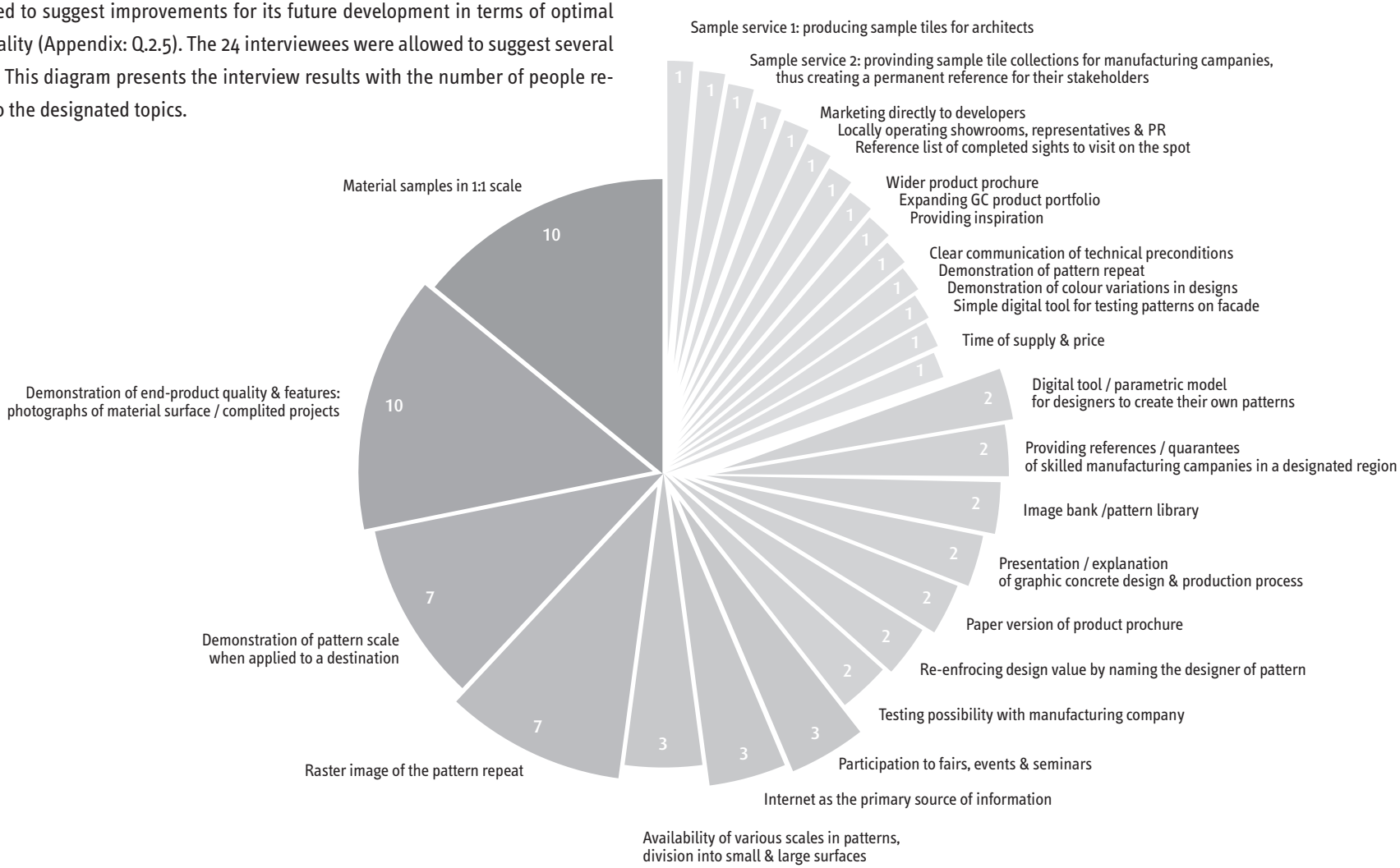


FIGURE 5.3: Interview findings: desired features to support and enhance the use of GCCollection™

Based on the interview findings, the set of logistic requirements for the concept of GCCollection™ can be divided into Primary Features [A] and Secondary Features [B]. The Primary Features are the mandatory elements that form the basis for the presentation technique of the collection. The role of the Secondary Features is to support the Primary ones.

Primary Marketing Features

[A.1] Demonstration of end-product characteristics

Demand: in the interviews, the lack of real-life samples formed the biggest risk for the overall use of graphic concrete technology, as it was difficult to envision how the actual end-result would look like. The best way to convince the respondents were the first-hand experiences of tangible 1:1 samples e.g. in a showroom or provided by the prefabrication company. Photographs were considered to be equally effective.
Solution: verification of the end-product by bringing the design from the level of graphic format into reality. In the collection catalogue, providing at least one photograph featuring an extract of the concrete surface with the pattern, aggregate texture, colour of the gravel and pigments.

[A.2] Demonstration of pattern in destination

Demand: in a design process, the interviewees found it the most challenging to envisage how the pattern would look like in action.
Solution: illustrating the scale of the pattern by presenting an image with the pattern applied onto a building in actual proportions. Additional images or zooming ability in the digital version to demonstrate how the pattern functions when it is seen from different perspectives.

[A.3] Raster image of the pattern repeat

Demand: an effortless way to see the basic design and to compare the patterns with each other.
Solution: providing the blueprint version of singular pattern repeat with the dimensions, and an additional image to illustrate the repeat frequency with a larger surface. The surface demonstration could also include a size reference, e.g. a graphic human figure, to further support the actualization of the graphic concrete pattern [A.2].

Secondary Marketing Features

[B.1] Offering a range of various scales in patterns

Demand: currently the architects have difficulty to imagine how the ready-made designs could be modified to better suit the destinations, and the present standards of the collection may form an obstacle for choosing a design from GCCollection™. There is a need for more freedom in terms of the availability of the patterns, and a demand for both larger and smaller textures and pattern repeats.
Solution: developing a renewed, wider range of patterns including more variability in terms of the scale of the pattern. Also, offering a limited assortment of sizes from singular patterns, e.g. 'Design X Large' and 'Design X Small'.
Developing the current GCCollection™ standard of uniform pattern repeat into a structured range of repeats, e.g. three different standards for screen sizes which would accommodate all the pattern designs.

[B.2] Re-enforcing the design image of GCCollection™

Demand: for architects, the use of ready-made patterns were seen as a major risk in terms of potentially compromising the uniqueness of the building. This is a notable motive for architects to choose an artist to create the pattern instead of using GCCollection™. The distrust towards ready-made collection was seen in the requests for 'parametric tool for designers to create their own patterns'. To dissolve the image of bulk design and lower the barrier for using GCCollection™, added value should be created for the collection. In addition, a more inspirational stance was also requested for the collection.

Solution: emphasizing the origin and value of the design by naming the designer of pattern, i.e. 'Design X, designed by Y exclusively for Graphic Concrete'.
Adding more content to the presentation of GCCollection™, i.e. communicative titles and descriptive introductions of the concepts, including storytelling in the form of inspirational mood boards, and demonstrating the possibilities in the use of graphic concrete.

[B.3] Graphic Concrete webpages

Demand: as a 'display window' of the company and the primary source of information for at least the majority of the foreign stakeholders, the web pages should contain a large amount of information relating to GCCollection™.
Solution: presentation of GCCollection™ with Primary Features [A.1-A.3].
A reference showcase of existing projects, also for visiting on the spot.
An illustrated guide of graphic concrete design and production process with clear communication of technical preconditions for architects and manufacturing companies.
A pattern library featuring the latest collection, but also to guarantee future access to existing patterns.

[B.4] Online application for architects

Demand: a digital tool for testing patterns, scales and colour variations on a facade.
Solution: as an extra service, providing an easy online application enabling designers to visualize the different possibilities of using graphic concrete®. The tool could feature a small range of dummy buildings with the main focus in demonstrating the scale and appearance of designs in a larger surface [A.1 & A.2].

In addition to Primary and Secondary Features, the interviewees raised issues relating to the overall marketing of the GCCollection™:

Co-operation with manufacturers

Demand: one of the most prominent defects in projects utilizing graphic concrete® is the uncertainty of end-product material quality, as the manufacturer of the project-specific sample tiles may not be the same one producing the end-product. Therefore, the know-how of the manufacturer was seen as a bottleneck when the architects were considering taking on graphic concrete® as a material to a project, and testing possibility with manufacturing company was mentioned in the requests.
Also, manufacturing companies were seen as an untapped resource for marketing the GCCollection™.
Solutions: providing references, a 'Graphic Concrete guarantee', of the region-specific skilled manufacturing companies for architects, developers and contractors.
To expand the visibility of Graphic Concrete products, providing sample tile collections for manufacturing companies, thus creating a permanent reference for their visiting stakeholders.
Also, potential cooperation with prefabrication companies in fairs etc. marketing events.

Face-to-face marketing

Demand: with a custom-tailorable, highly innovative technology such as graphic concrete, the interviewees considered experiencing the authentic, real-life product qualities the best way to market the product [A.1]. The role of human interaction and 'footwork' was highlighted especially when expanding to new international areas.
Solution: participation to fairs, events and seminars.
Locally operating brand showrooms, representatives and products consultants.
Marketing directly to developers.

GCCollection™ Pattern Requirements

For the development of future GCCollection™, the 24 interviewees were directly asked to specify the required features for the pattern design (Appendix: Q.2.7). The results provide indication of the desired direction for product development. This chart presents the identified main characteristics with the number of people referring to the designated topics.

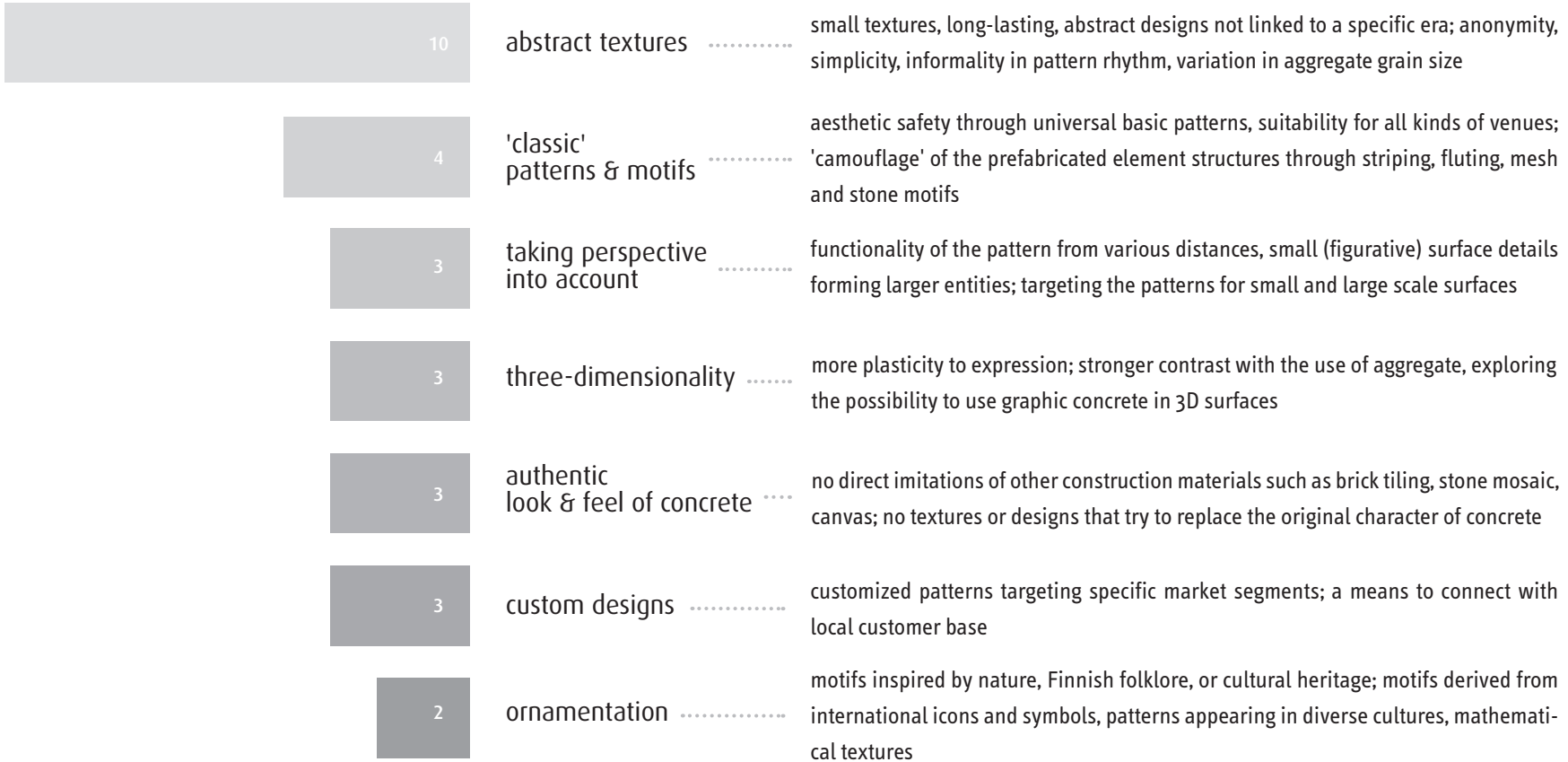


FIGURE 5.4: Characteristics for GCCollection™ pattern design

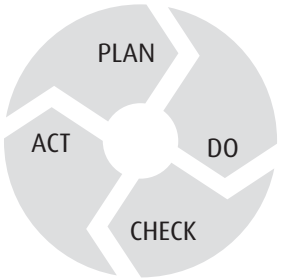
GCCollection™ Collection Strategy

Contrary to the cyclic renewal of majority of design commodities, the collections of material suppliers in the field of construction and architecture are not usually operated based on predetermined seasons. Instead of constant change of the product portfolio, the continuity and availability of designs provide more value-adding functionality for the customers. With a long product life cycle, there are fewer risks for the architect regarding potential needs of repair or expansion in the building site. In addition to not supporting the customer needs, a system of fixed collection cycles would be too heavy to maintain for Graphic Concrete.

At this point, the main demand for the product portfolio management of GCCollection™ is the development of a pattern library. By establishing a set of constant pattern categories, it is easy to systematically build up the overall product offering by targeting new design launches according the named sub-concepts. Also, creating a pattern library provides competitive edge for Graphic Concrete in respect of other operators in the field of concrete treatment technologies with focus on ready-made designs. So far, the larger brands have had the advantage through product volume.

With the emphasis on agility of the portfolio management and the ability of a small company to respond quickly on demand, the pace and scope of collection renewal are left unscheduled. However, the product development should be an on-going process, based on iterative rounds of continuous learning and refinement. By applying the plan-do-check-act model, PDCA cycle, the management of GCCollection™ is not based on fixed timetables or predetermined quantities of designs. Instead, it offers a tool to constantly upgrade the product selection based on customer feedback, sales results and the changes in the company's operational environment.

The operational cycle of the product management tool is dependent on the cycles of construction projects with the minimum time span being 18 months. Therefore, getting feedback and tracking sales results is presumably a slow process, and the initial portfolio management cycle for GCCollection™ is set out to be 12 month.



PLAN
- collect relevant data based on design management, customer insight, trend forecasts, etc.
- define/make improvements to the GCCollection™ concept
- create/revise design guidelines for collection execution
- set sales targets/decide upon other measurements to gauge the effectiveness

DO
- execute the new patterns & revise the existing designs according to the guidelines
- launch the products

CHECK
- collect customer feedback
- confirm the results through before-and-after data comparison

ACT
- document the results
- make recommendations for product development to be addressed in the next PDCA cycle

FIGURE 5.6: Implementing sequential PDCA cycle in product management (adapted from the method of W. Edwards Deming, Koria 2012)

Trend Adaptation for GCCollection™

The trend forecast Surface Design in Architecture, featured in Chapter 4, creates a platform for the development of the GCCollection™ product categories. The trend profiles are reviewed with the positioning of GCCollection™ to identify the potential 'fuel' for forthcoming design solutions. Illustrated by using the Topography of Trends chart, the following trends can be applied as the basis for further concept development:

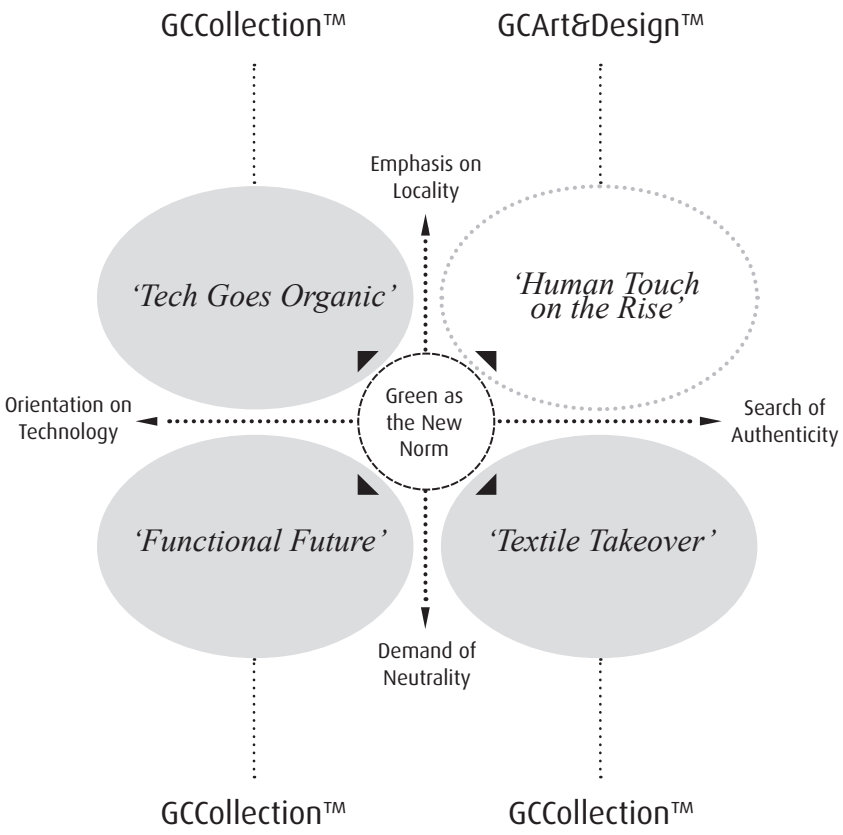


FIGURE 5.5: Trend opportunities for GCCollection™ category development

Functional Future

As an already prominent trend, this theme forms a justifiable course of development from the existing geometric patterns in GCCollection™ to a more comprehensive line of design. However, the core feature in all the surface solutions in Functional Future, the aspect of actual functionality in materials, is challenging to execute through pure aesthetics. Also, because the trend is already a dominant one, more attention should be paid to the potential evolution of its visual characteristics in order to keep the line of design up-to-date.

Tech Goes Organic

Very prospective trend in terms of the growing amount of environmental planning and emphasis on creating more constructed milieus. Simultaneously, the pattern category could contribute to brand promotion through creating an image of a slightly more environmentally conscious style category. By approaching the pattern design through discretion and visual assimilation, 'neutrality', Tech Goes Organic is able to adapt to large market areas.

Textile Takeover

There is great potential in Textile Takeover, as it is not only an emerging trend, but possibly the least commercialized trend so far in terms of existing product solutions. Also, the theme offers the most opportunities to access the field of interior design in terms of pattern design, and allows the product range to be developed into a wider portfolio of interior-specific solutions in the future, as well.

Human Touch on the Rise

The fourth trend profile, Human Touch on The Rise, does not hold strong potential regarding the operational concept of GCCollection™. With the focus on location-specific identities and storytelling, the main demand is for unique design solutions which are infeasible to provide through ready-made patterns. Therefore, Human Touch on The Rise falls into the coverage of GCArt&Design™.

6: Design Guidelines for GCCollection™

The Design Guidelines provide comprehensive direction for GCCollection™, consisting of the following sub-chapters:

- GCCollection™ Profile
- GCCollection™ Character
- GCCollection™ Application

The Design Guidelines are developed by Anna Kuukka based on the Product Development Strategy for GCCollection™ featured in Chapter 5.

6.1: Introduction

Graphic Concrete [1]

Graphic Concrete markets and sells innovative products known as graphic concrete. The technological solution is based on a patented innovation that allows the core element of concrete, rocks, to be highlighted. When the concrete mass is a different colour than the rocks within, patterns and images can be created on the concrete surface. To pattern the concrete, a membrane is placed on the mould table. In addition to standard patterns, the solution enables uniquely designed patterns on large surfaces. The areas of use for graphic concrete® cover the range of public, residential, environmental, commercial, industrial and interior construction.

Graphic Concrete service consists of delivering a high quality product and expert consultation to all stakeholders throughout the entire building process. The concrete elements using graphic concrete® technology are produced internationally by the concrete manufacturers in local markets. Despite its custom-tailorability, the graphic concrete solution is easy and cost effective, making it suitable for concrete element production processes in which special attention is paid to overall profitability.

Graphic Concrete helps to create exciting architecture that enhances the entire living environment by increasing the quality and value of concrete element construction. Graphic Concrete enables more creative, distinctive and individual construction designs. The innovative patterning also offers new possibilities for utilizing the concrete parts of buildings.

Graphic Concrete aims to be the leading innovator in the concrete business, an internationally recognized company in the construction industry, and an established solution among architects. The key factor in all business operations is high-quality design.

[1] adapted from Graphic Concrete Communication Guidelines

GCCollection™

GCCollection™ is Graphic Concrete's own range of ready-made design patterns. The line of design consists of generic, long-lasting patterns suitable for universal use in architecture regardless of the geographic or cultural context.

Design Guidelines

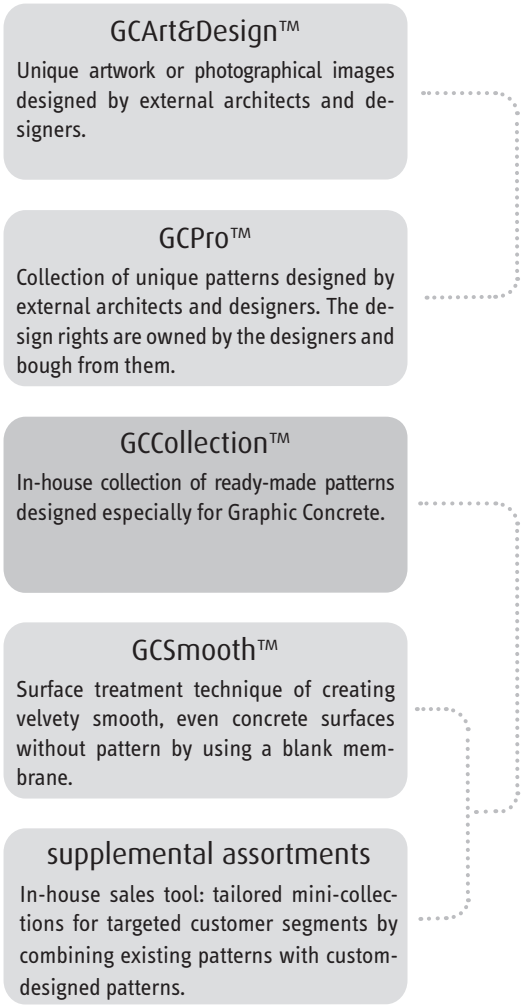
Based on the Product Strategy of Graphic Concrete, the Design Guidelines provide an instructional platform for the development and maintenance of GCCollection™. The Guidelines consist of the following chapters:

- GCCollection™ Profile – introduction of Graphic Concrete product categories and positioning of GCCollection™
- GCCollection™ Character – description of sub-categories including design instructions
- GCCollection™ Application – technical instructions for pattern design

6.2: GCCollection™ Profile

Collection Positioning

Graphic Concrete has five product categories:



external design categories:

These categories create the principal deliverable of Graphic Concrete. The possibility to custom design the end product and to create unique solutions is the main competitive advantage that differs the company its competitors.

in-house design category & supporting categories:

The role of these categories is firstly to complement the external design categories of unique, more art oriented designs by providing an easy, commercial alternative to them; secondly, they reenforce the image of Graphic Concrete as a design brand, a high-quality service provider, and a technical expert of concrete solutions.

FIGURE 6.1: Graphic Concrete product categories and positioning

Objectives

GCCollection™ aims to provide a viable alternative to the unique patterns that are created project-specifically by architects or designers in the architectural construction project. The collection does not intend to replace or compete with the unique patterns. Instead, the aim is to offer cost-effective, yet high quality ready-made patterns, making the overall design and construction process easier, faster and more convenient for Graphic Concrete customers.

GCCollection™ focuses on solutions that are suitable for mainstream architectural destinations. Therefore, the main quality for the patterns is the ability of the designs to withstand time by aiming for a discreet, more abstract expression. The patterns should not be overly recognizable or distinct when used in a destination, but rather reinforce the architectural concept by creating subtle added value through the surface design. Although the products of GCCollection™ can be used in interiors and concrete slabs, the primary destination of use is building facades. This should be taken into account in the scale of pattern design.

In addition to the commercial mainstream patterns, GCCollection contains also a smaller range of more editorial designs relating to current and emerging trends. These patterns function as a tool to engage and inspire Graphic Concrete customers, and to build up the brand image as a visionary design company.

Target Group

GCCollection™ is primarily targeted to architects and design professionals in charge of visual solutions in architectural surface design both in private and public sectors. These international professionals are the main users of GCCollection™.

Other stakeholders include concrete element industry, construction contractors and consultants, developers, media and general public, community councils, policymakers and bureaucrats. These audiences do not use GCCollection™ themselves, but are directly or indirectly involved in the Graphic Concrete operation.

6.3: GCCollection™ Character

GCCollection™ consists of three individual sub-categories: GCControl, GCFlow and GCCanvas. Each category has its unique character and positioning in the collectionffering, illustrated in the following chart.

The purpose of the differentiated sub-categories is to provide variety of choices to the Graphic Concrete clientele according to the use, concept, and aesthetic preferences of the architectural destination. Secondly, the aim is to supply both commercial user-friendly patterns, and more editorial designs that serve as a source of inspiration. In terms of the sub-categories, GCControl and GCCanvas are targeted to more mainstream users, whereas GCFlow can include slightly more provocative designs.

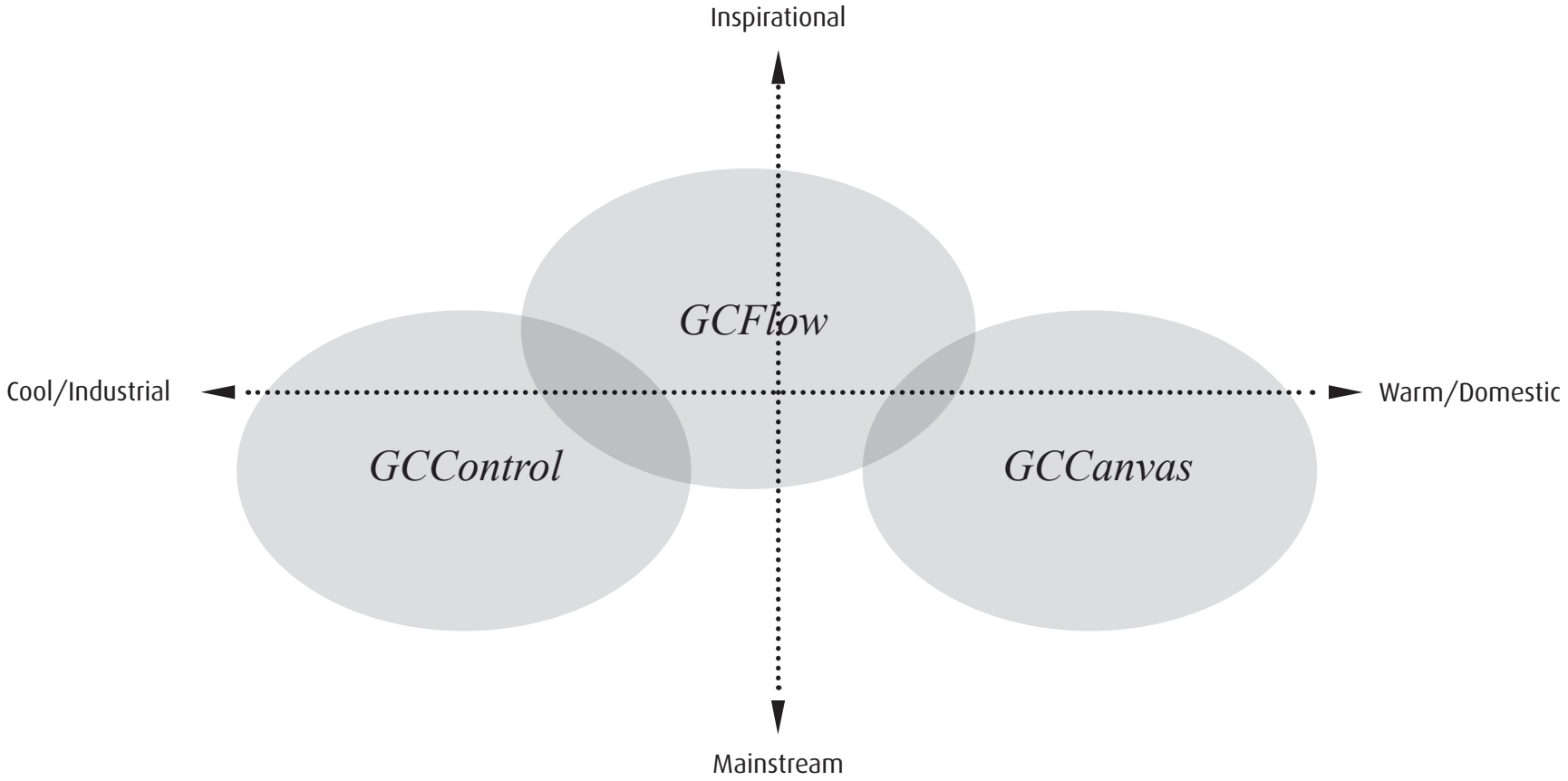


FIGURE 6.2: Positioning of the GCCollection™ sub-kategories

GCCollection™ | GCControl

The essence of GCControl is technicality, posture and clarity of design. The style is distinctively artificial and deliberately distanced from any references to natural origins. Therefore, the design language of GC-Control does not include any organic or hand drawn elements. With motifs derived primarily from geometric shapes, abstract expression is the dominant feature in the overall line of design.

GCControl provides solutions especially for industrial, public, commercial, and interior destinations.

Three ways to approach the GCControl design language:

Machine-Made Structures. The surface consists of repetitive elements that are aligned geometrically or computer rendered algorithmically. The design varies from minimalistic textures to more decorative, ornamental motifs. Illusion of three-dimensionality can be used to create additional sense of depth to the surface.

2D Graphics. Abstraction and minimal expression are the most visible here in the use of two-dimensional graphics. The aim is to provide a range of classic, 'safe' patterns in terms of their ability to sustain regardless of the changes in architectural surface trends. 2D graphics can also include more youthful, crisp and editorial patterns which are executed through bold contrasts.

Asymmetrical Continuance. This approach allows discreet play of variations and adding a sense of movement within GCControl aesthetics. The key feature for maintaining the unified GCControl style is the use of geometric shapes, designated units, of which the composition is formed. The asymmetrical pattern should preferably consist of densely placed small elements. In designs for more inspirational purposes, there can be larger units which create loose, airy textures with less repetition.

GCControl key words:

machine-made aesthetics

rationality

clean-cut

geometric

abstract

classic

distanced

impersonal

coolness

three-dimensionality

stability

Machine-Made Structures

minimalism ◄ ····· ► mechanic decorativeness


6.1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6.6

2D Graphics

discreet classics ◄ ····· ► bold geometry


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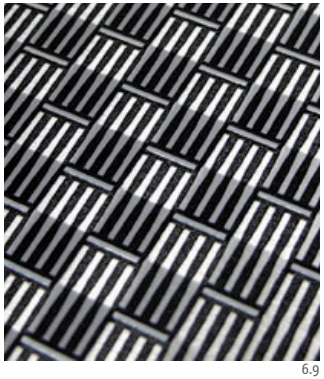
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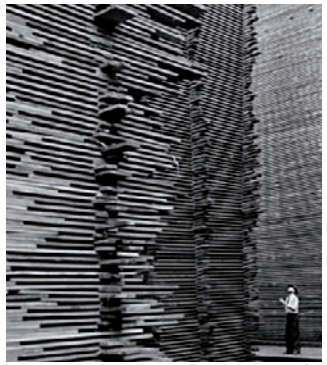
Asymmetrical Continuance

density of units ◄ ····· ► loose composition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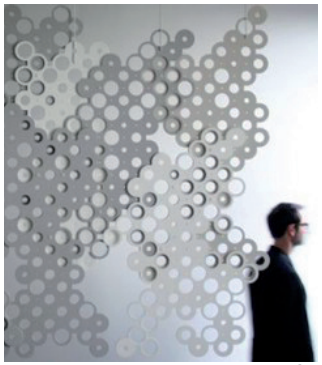
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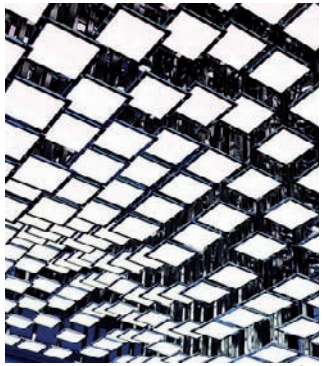
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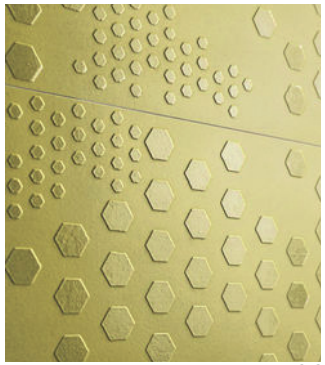
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GCCollection™ | GCFlow

The objective of GCFlow is to create harmony between the architectural destination and its natural surroundings. It adapts the building to its surroundings with a pattern that performs as a camouflage, creating a link between the built element and the environment. The design language is derived from organic world and pays respect to the original shapes, structures and surfaces found in the nature. GCFlow does not favor elements that highlight artificial, man-made aesthetics.

GCFlow provides solutions especially for environmental, public, residential and industrial destinations.

Three ways to approach the GCFlow design language:

Continuous Textures. These patterns cover the whole surface area. The organic elements form dense, repetitive patterns with stable, calm outlook. This is particularly suitable for patterns of small scale of repeat. Alternatively, the composition can have a sense of direction and movement, which is best implemented through larger surfaces.

Composition Variations. Here, the goal is to blur the concept of a ready-made pattern towards more nature like, free-form surfaces. The designs are created with minimum amount of aligned repetition for more fluid outlook. The surface can form an ambiguous, neutral texture, or use gradient effect for creating a more dynamic composition.

Motifs of Repetition. For the patterns using distinctive rhythmic repeats, the motifs should be taken from nature. GCFlow should not include ornaments as such because they divert the visual concept towards artificial design language. Instead, the rhythmically repetitive elements should take inspiration from biomimicry or use non-figurative, abstract elements.

GCFlow key words:

organic design language

fluidity

transfiguration

randomness

lifelike patterns

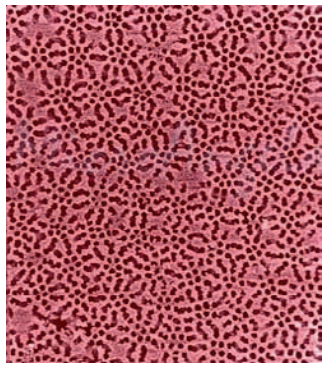
sense of movement

ambiguity

biomimicry

Continuous Textures

homogeneity, stability ◄ ► sense of movement, direction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Composition Variations

obscurred boarders ◄ ► gradience


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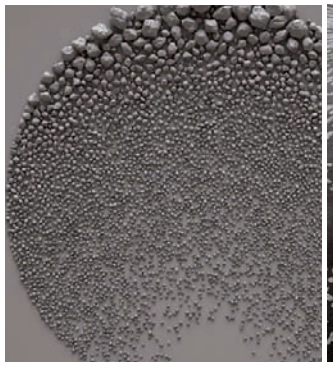
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Motifs of Repetition

biomimicry ◄ ► random absractation


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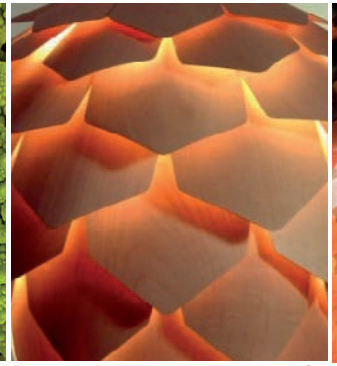
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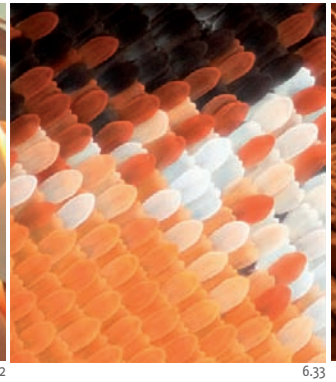
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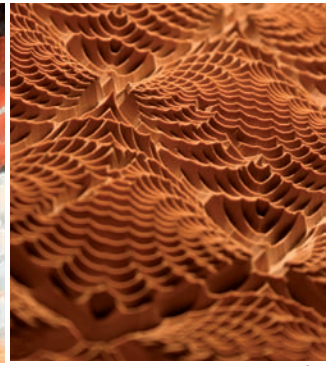
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GCCollection™ | GCCanvas

GCCanvas creates a sense of approachability and presence of humanity by taking inspiration from materials and textures with visible human imprint. The references to textiles and surfaces familiar from everyday life bring about an inviting, warm atmosphere. GCCanvas does not include artificial, technological motifs or organic composition variations. It focuses on rhythmic patterns and structures with clear repetition that create an association to hand-made artifacts.

GCCanvas provides solutions especially for interior, residential, commercial and public destinations.

Three ways to approach the GCCanvas design language:

Highlighting Structures. Woven, folded, knitted, pleated, braided, knotted... The emphasis on structures aims to create a sense of three-dimensionality and depth to the concrete surface. The structure can be formed of small, discreet texture with a modest effect, or showcase a rough, three-dimensional pattern with a more tactile edge.

Full Coverage Repeats. These patterns continue over the whole surface in a uniform scale with no variations in the composition. The motifs of repeat can range from anonymous elements to hand-drawn, even figurative objects. However, the figurative character should not be in the leading role, but only to complement the design when the pattern is viewed from a close distance.

Ornaments. The ornamented pattern covers the whole surface, but there can be variation e.g. in a form of discreet gradient effect. The motifs in ornaments should preferably be abstract, but neutral motifs, such as elements from nature, can be used. References to any religions or specific culture related symbols should be avoided.

GCCanvas key words:

human imprint

inspiration from structures

tactility

authenticity

repetition

emphasis of rhythm

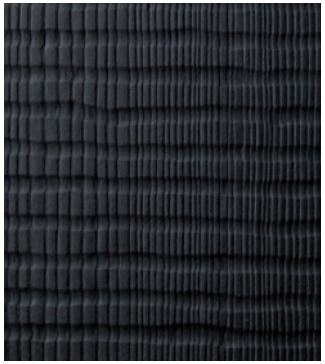
full coverage patterns

warmth

coziness

Highlighting Structures

sedate ◄ ► 3D roughtness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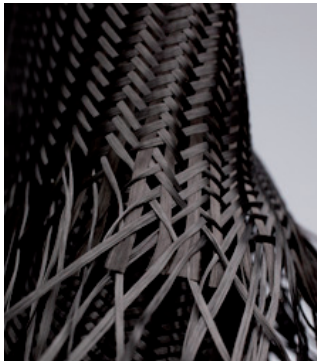
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Full Coverage Repeats

anonymity ◄ ► presence of human handprint


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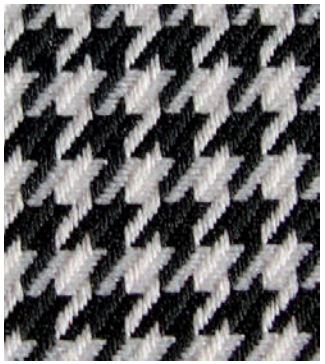
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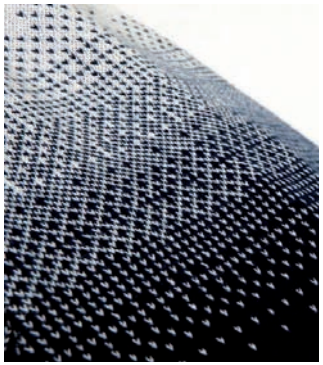
Ornaments

abstract ◄ ► figurative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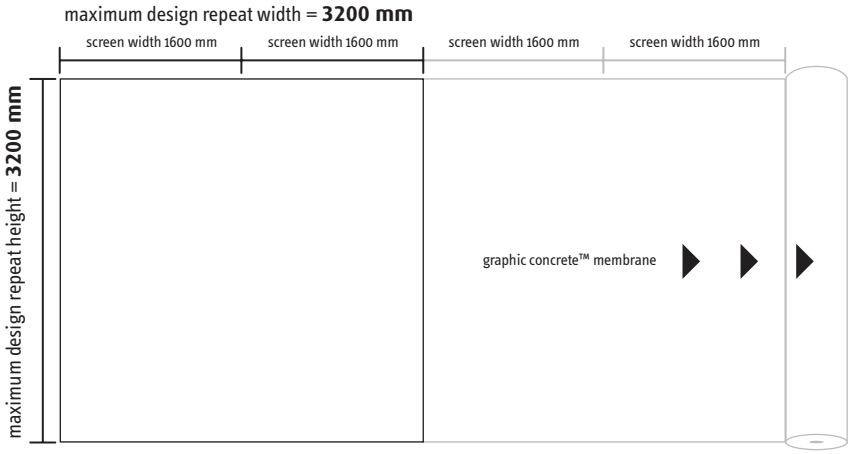
6.4: GCCollection™ Application

Technical Requirements for Patterns

The GCCollection™ is intended to be a cost-efficient, user-friendly, and reliable tool for all stakeholders in the production process. To achieve these objectives, the following issues should be considered when designing the patterns:

1. The maximum design repeat is 3200 mm in width x 3200 mm in height. This is also the optimal scale of the repeat in terms of production efficiency. The patterns are printed with silk screen printing technique to the graphic concrete™ membrane. The optimal repeat scale is formed of two printing screen widths (á 1600 mm) and the printable height of the membrane (3200 mm).



2. Optimizing the raster size and the width of the stroke.

- Minimum raster diameter 5 mm
- Minimum stroke width 5 mm

For both technical and visual reasons, the preferred size of the graphic details should be larger (15-20 mm).

3. Minimizing the waste in membrane usage. The price/m² including actual waste must be realistic and easy to evaluate.

4. Minimizing the additional work related to the production of graphic concrete.

- For architect: minimizing the need to guide and instruct the stakeholders in a building project
- For structural designer: minimizing the instructions of membrane alignment in concrete element shop drawings
- For concrete element production: measuring and placing the membrane should be fast and easy
- For Graphic Concrete: minimizing the overall work load

5. Minimizing the potential mistakes.

- Creating 'flexible' patterns that can be placed on any position of the concrete element (e.g. not aligned according to windows or building storeys)
- The pattern can be placed over the meeting edges of concrete elements without it damaging the design
- The pattern repeat can easily be continued in vertical direction in case of being applied to high concrete elements

6. Pattern applicability in both horizontal and vertical direction. An ideal design can be placed on the element in both directions. However, this is not a compulsory feature for all designs.

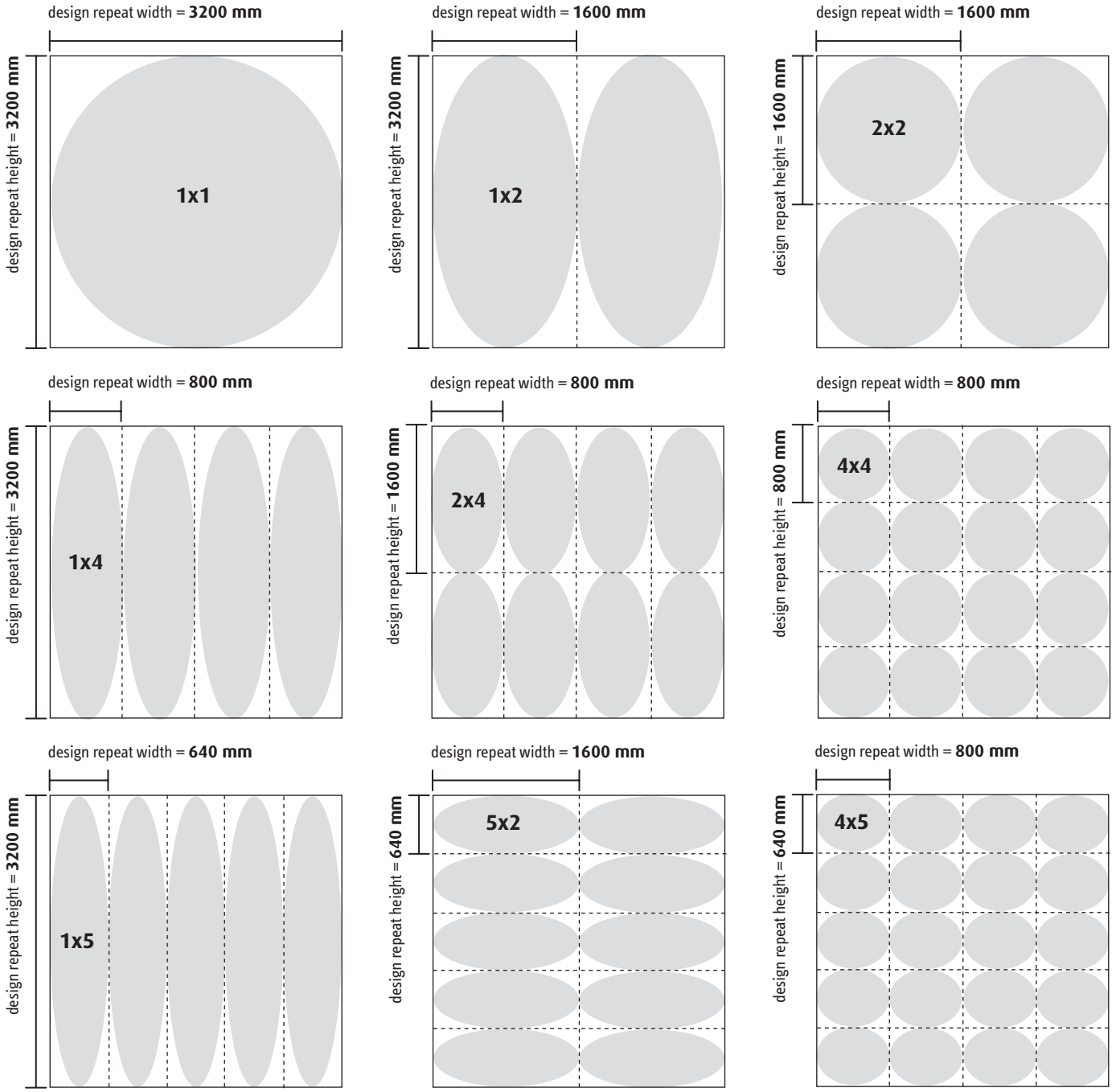
7. Minimizing the amount of aligned graphical elements in the repeat edges. Minimizes the technical risks in the printing process by avoiding e.g. thin lines or similar precisely aligned elements continuing between the pattern repeats.

Pattern Repeats - Preferences

The pattern repeat used in GCCollection™ can be composed in multiple ways. Using diverse repeats creates more variety for the visual and functional entity, and **there is a need of both designs with large repeats and small textures**. Also, **the same pattern can be available in diverse scales.**

However, **the basis of the repeat should preferably be 3200 mm in width x 3200 mm in height** according to the optimal usage of the membrane and screens. The optimal repeats are composed of dividing the height or width of 3200 mm with 1, 2, 4 or 5. With small textures, the repeat can consist of even smaller dimensions. Here are **examples** of illustrated repeat variations:

- width 3200 mm, height 3200 mm
- width 1600 mm, height 3200 mm
- width 1600 mm, height 1600 mm
- width 800 mm, height 3200 mm
- width 800 mm, height 1600 mm
- width 800 mm, height 800 mm
- width 640 mm, height 3200 mm
- width 1600 mm, height 640 mm
- width 800 mm, height 640 mm

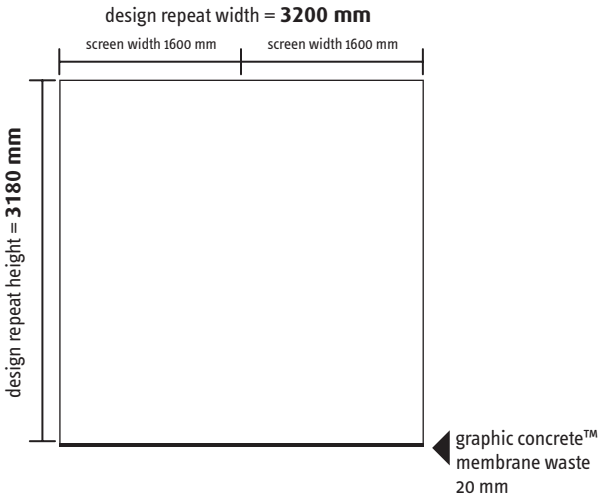


Pattern Repeats - Alternatives

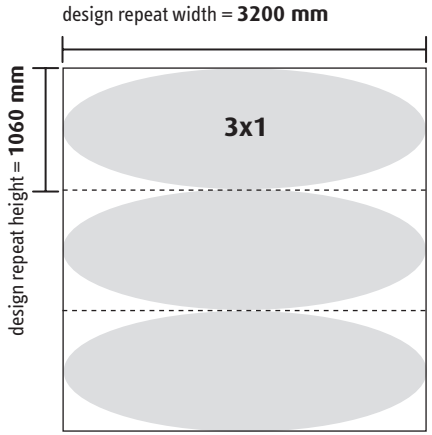
The repeat can also be composed dividing the height with 3 or 6. The following **examples** are illustrated here:

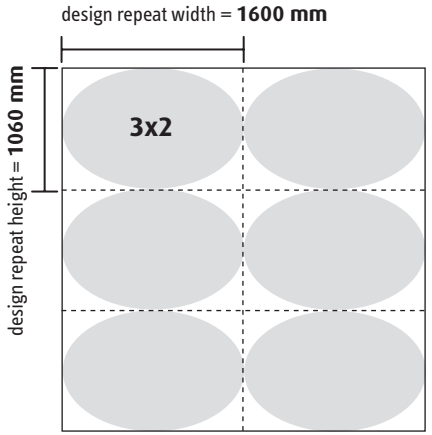
- width 3200 mm, height 1060 mm
- width 1600 mm, height 1060 mm
- width 800 mm, height 1060 mm
- width 640 mm, height 1060 mm
- width 1600 mm, height 530 mm

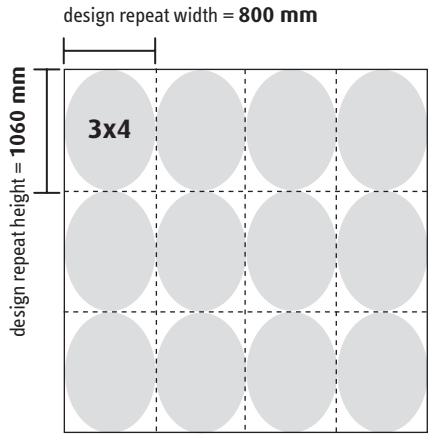
However, this way the amount of membrane waste is 20 mm in height.

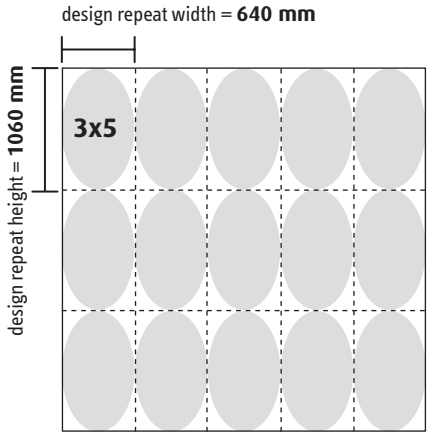


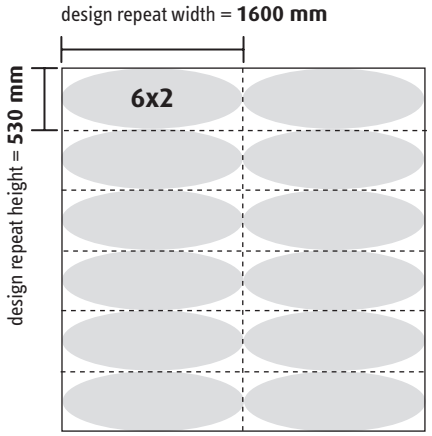
It is important to recognize that even though it is possible to introduce other repeat variations in addition to the examples featured here, the aim should always be on the optimization of membrane usage and the printing screens (Technical Requirements for Patterns: 3. Minimizing the waste in membrane usage).









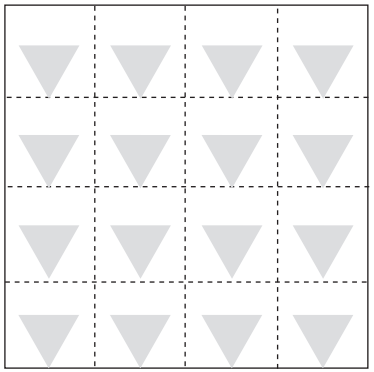


Pattern Repeats - Repeat Structure Examples

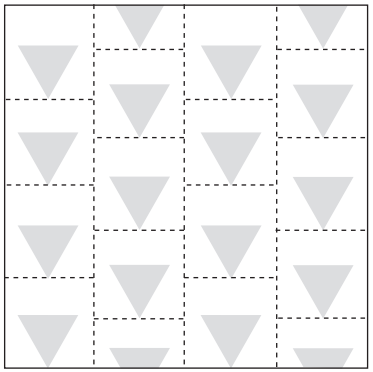
The following illustrations are **examples** of the repeat structures employed in design. The illustrated structures can be adapted to any of the pattern repeat dimensions of GCCollection™ (Pattern Repeats - Preferences and Alternatives).

In addition to demonstrations presented here, the patterns can be constructed using alternative compositions, as well.

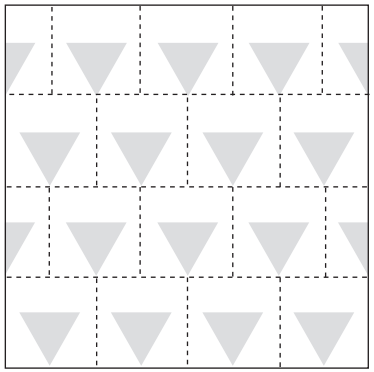
1. Full Drop



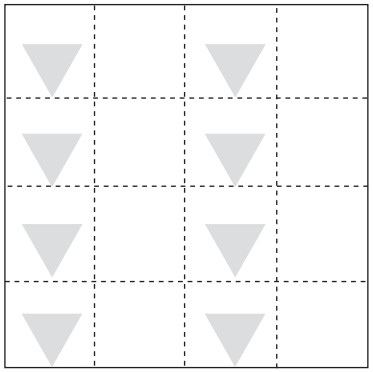
2. Half Drop



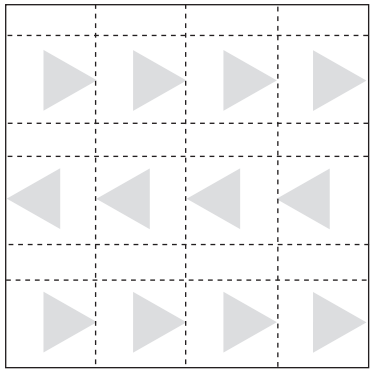
3. Brick



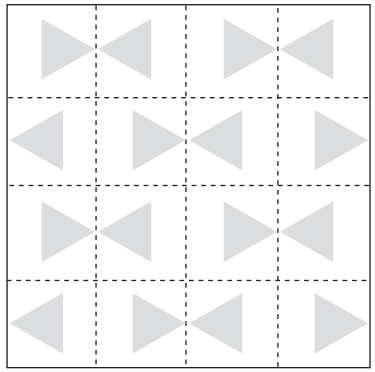
4. Stripe Vertical



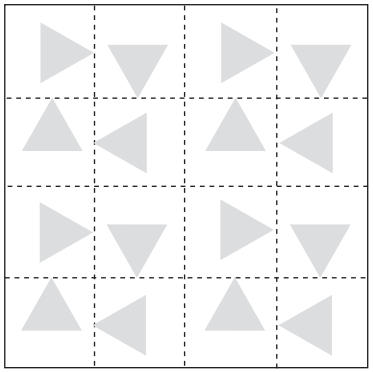
5. Stripe Horizontal



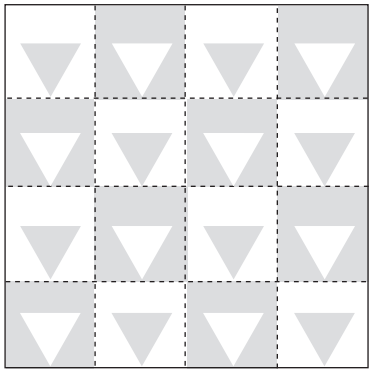
6. Mirror



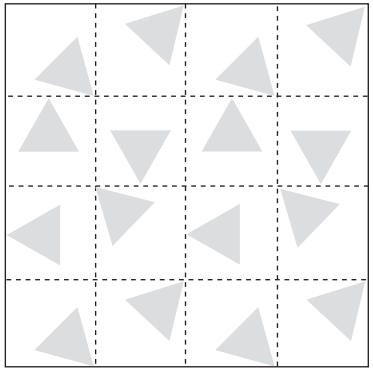
7. Turn Around



8. Counter Change



9. Multidirectional

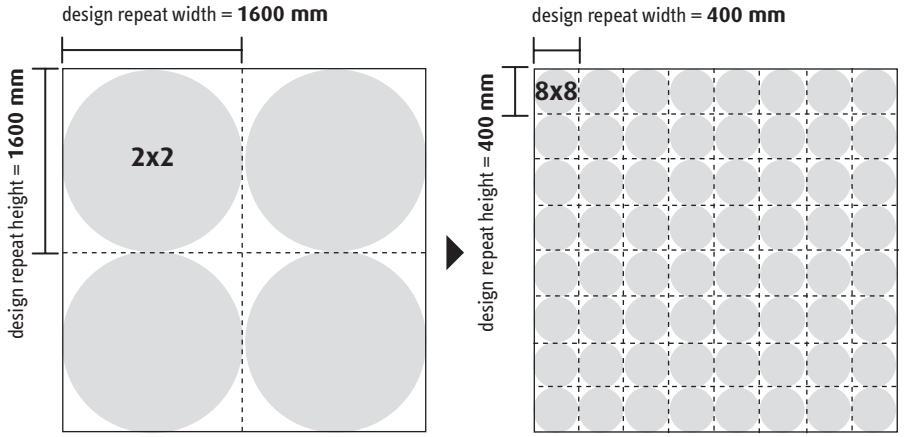


GCCollection™ Pattern Scales

When designing a pattern for GCCollection™, the design should be tested in various scales. There is a need for variety in the collection portfolio, as patterns are viewed from diverse distances in different building destinations. Providing multiple options offers the architect more usability in terms of the surface design choices and creates value to the overall product category. Therefore, if the same pattern is available in diverse scales, the variations can be offered to Graphic Concrete's customers as design options within the collection.

When scaling the patterns, the outcome should always be tested with print-outs to see how the alternation affects to the design. For example, there may be a need to expand the stroke width or increase the raster size when the pattern is scaled smaller.

Example of pattern scale variation:



GCCollection™ Pattern Library

The evolution of GCCollection™ is based on strategic development of Graphic Concrete's Pattern Library. The Library is founded on the identified sub-categories of GCControl, GCCamouflage and GCCanvas, and it features all the existing design patterns including earlier designs. The Pattern Library is also available for the clientele of Graphic Concrete. For the continuance of the collection portfolio, it is important that the new designs created for GCCollection™ are consistent with the recognizable sub-category concepts and previous patterns.

For further references for pattern design, please see the current status of the Pattern Library.

Presentation Format of GCCollection™ Patterns

The designer delivers the following material and information to Graphic Concrete for the presentation of the pattern in the GCCollection™:

1. Raster image OR vector image of the pattern repeat.
This includes a blueprint version of a singular repeat, and an additional image to illustrate the repeat frequency in a larger surface. Both images should feature dimensions.

2. Raster image OR vector image of the pattern scales.
If the pattern is available in various scales, the size assortment is illustrated with dimensions.

3. Working title for the pattern.
A suggestion or suggestions for the pattern name. The title should reflect the idea, concept or emotion behind the design. Graphic Concrete reserves the right to define the final name under which the pattern will be presented to customers.

4. Name of the designer.
Re-enforcing the design value of the product.

7: Design Concept for GCCollection™

The Design Concept provides examples for GCCollection™ pattern design and the required presentation formats, and crystallizes the key messages to address the Graphic Concrete clientele.

GCCollection™

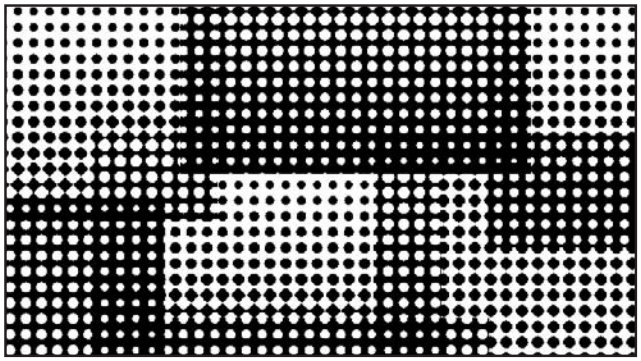
GCCollection™ is our own range of ready-made design patterns, consisting of long-lasting quality designs suitable for universal use in architecture.

The GCCollection patterns are divided into three categories:
GCControl, GCFlow, and GCCanvas.

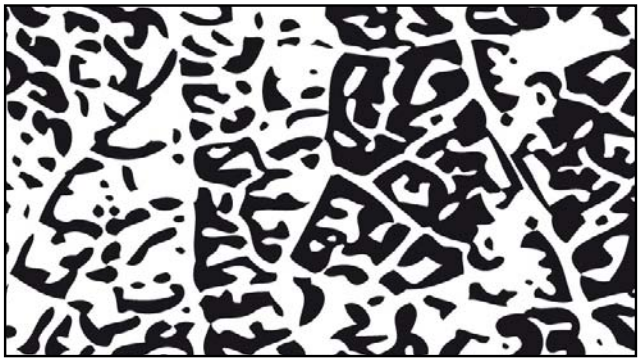
Each category has its unique character, designed to provide effortless, cost-efficient alternatives to our customers. With focus on innovative design, we hope our patterns inspire your construction project!

GCCollection™ | Index

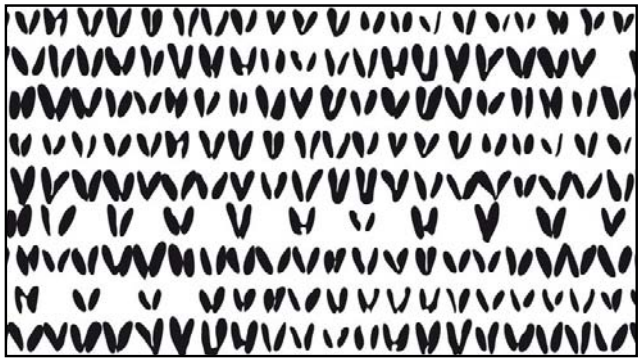
GCControl | Kaleidoscope



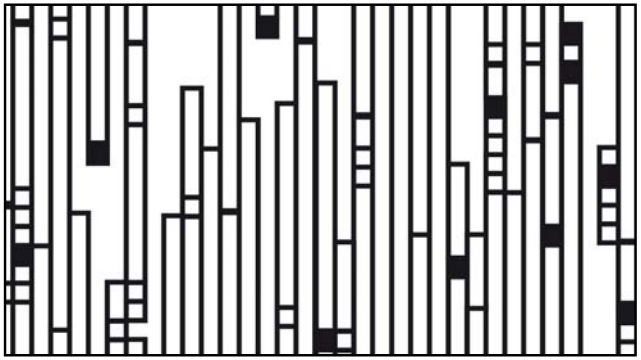
GCFlow | Shade



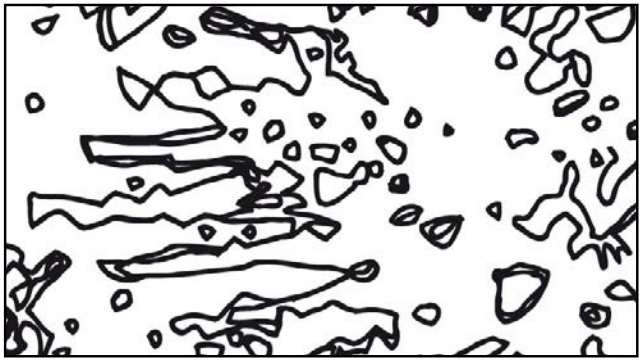
GCCanvas | Knit



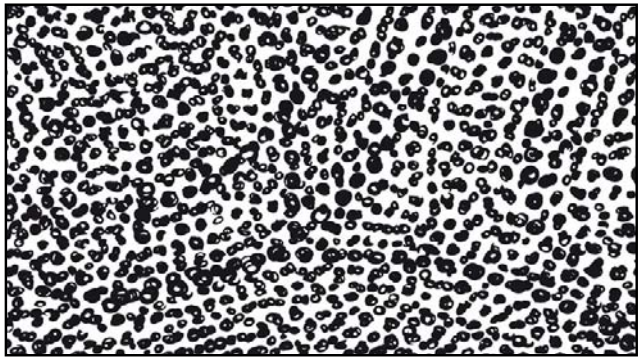
GCControl | Metropolis



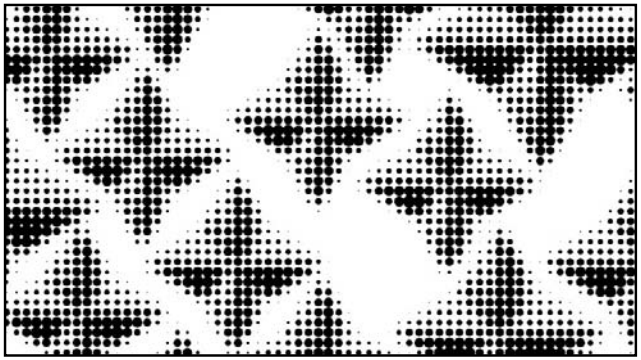
GCFlow | Shoreline



GCCanvas | Sketchbook

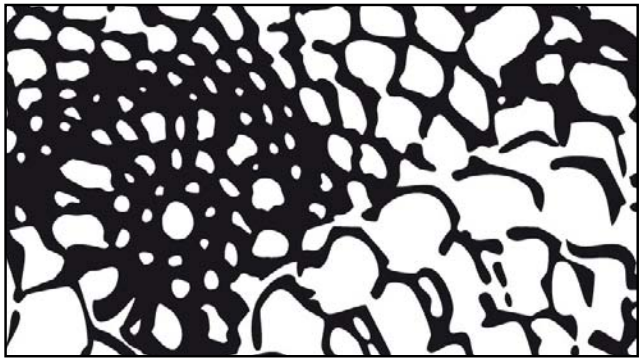


GCControl | Nebula



GCFlow | Cone

GCCanvas | Nostalgia



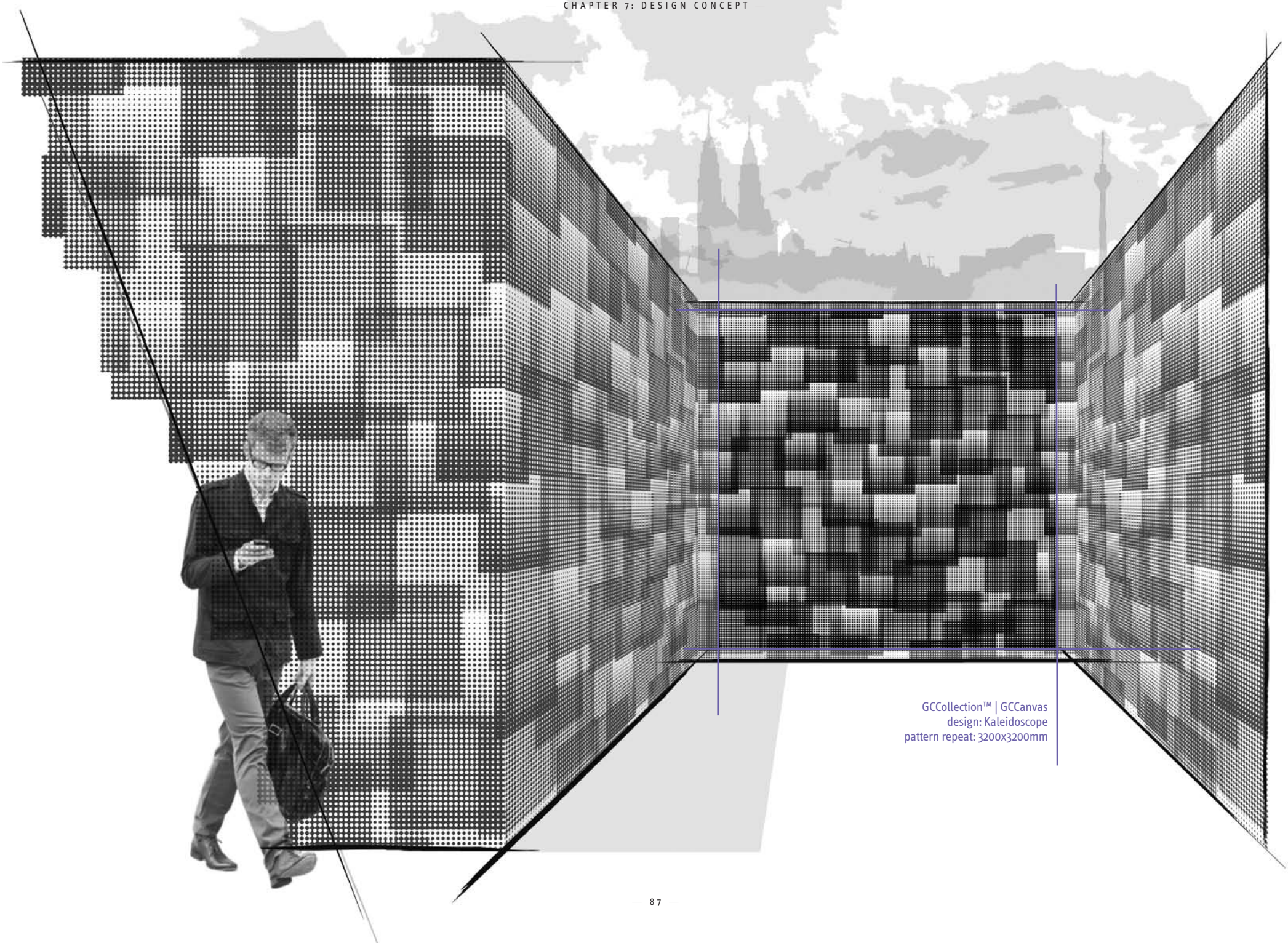
GCCollection™ | GCControl

With clean-cut geometric motifs, GCControl highlights the clarity of architecture through minimalistic yet stylish expression. It offers a range of classic, abstract textures that complement the posture of the original building design. Ranging from austerity to machine-made decorativeness, GCControl creates an ambience of distanced, technological elegance.

GCControl provides solutions especially for industrial, public, commercial, and interior destinations.

GCCollection™ | GCControl

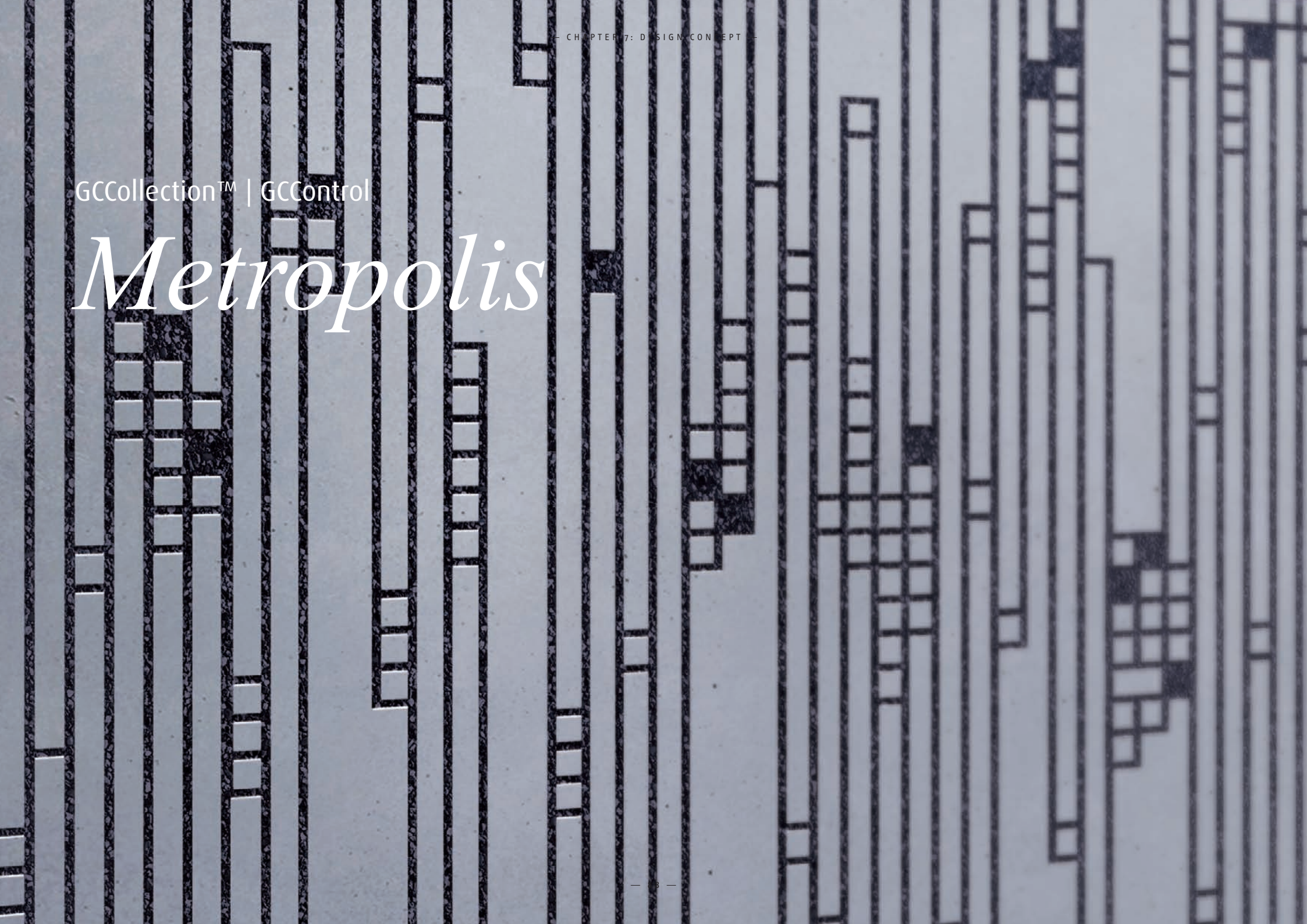
Kaleidoscope



GCCollection™ | GCCanvas
design: Kaleidoscope
pattern repeat: 3200x3200mm

GCCollection™ | GCControl

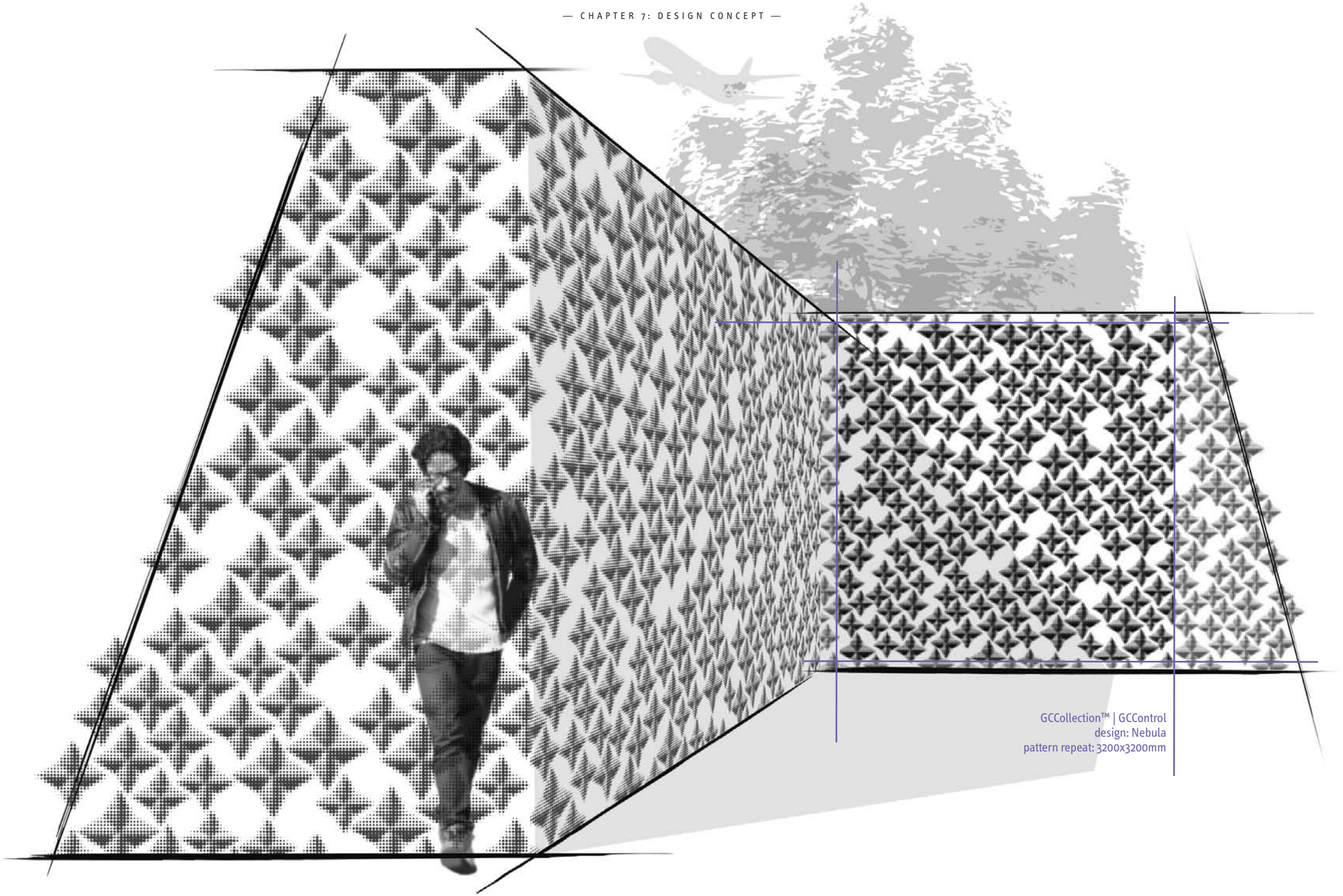
Metropolis



GCCollection™ | GCControl
design: Metropolis
pattern repeat: 3200x3200mm

GCCollection™ | GCControl

Nebula



GCCollection™ | GCControl
design: Nebula
pattern repeat: 3200x3200mm

GCCollection™ | GCFlow

GCFlow creates harmony between the architectural design and its natural surroundings. By taking inspiration from the organic world, it presents free-form surfaces and fluidity of design that help to adapt the building to its destination. The design language pays respect to original shapes, structures and surfaces found in the nature, effortlessly linking the built element with the environment.

GCFlow provides solutions especially for environmental, public, residential and industrial destinations.

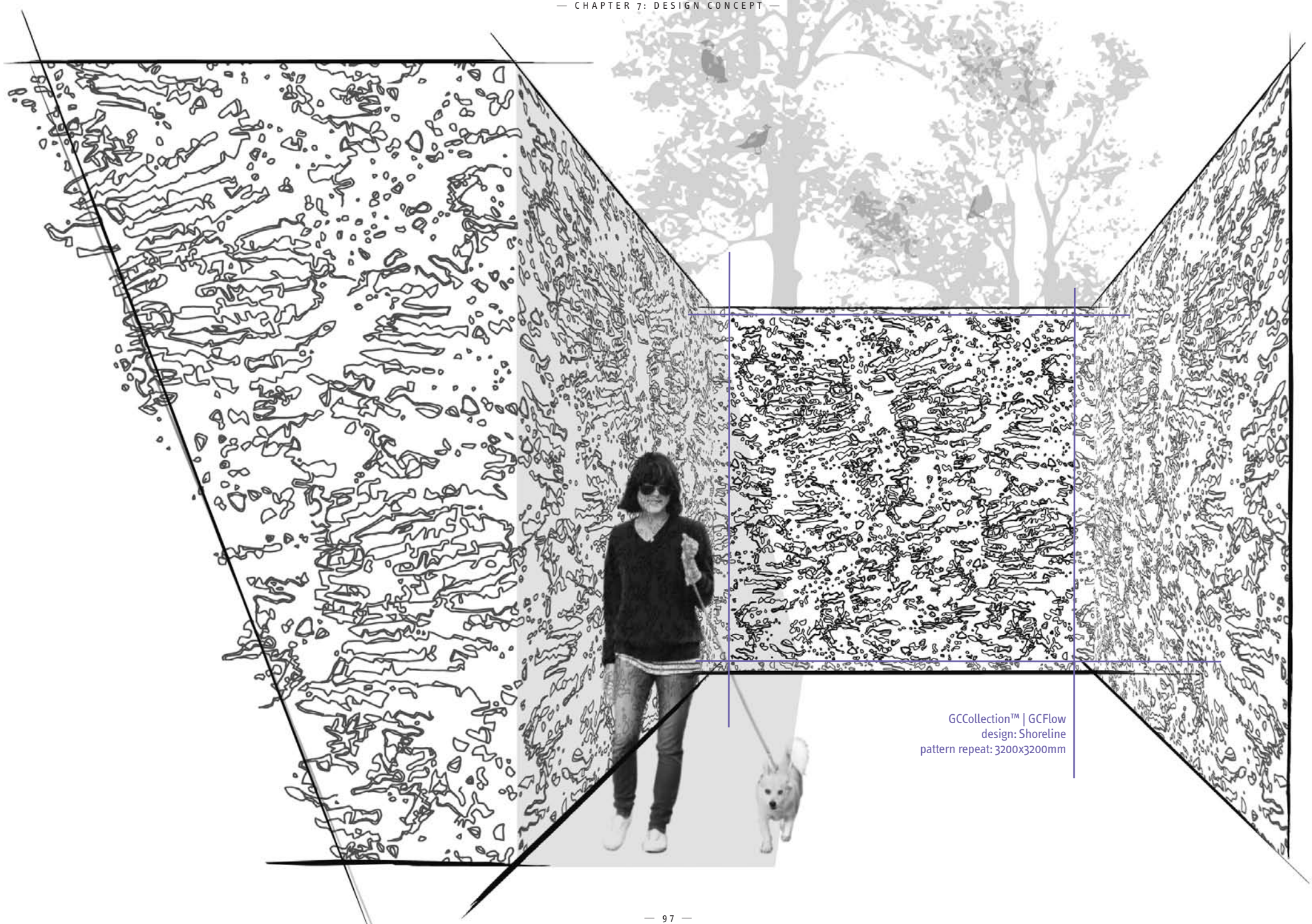
GCCollection™ | GCFlow

Shade

GCCollection™ | GCFlow
design: Shade
pattern repeat: 3200x3200mm
also variations: Shade Nega

GCCollection™ | GCFlow

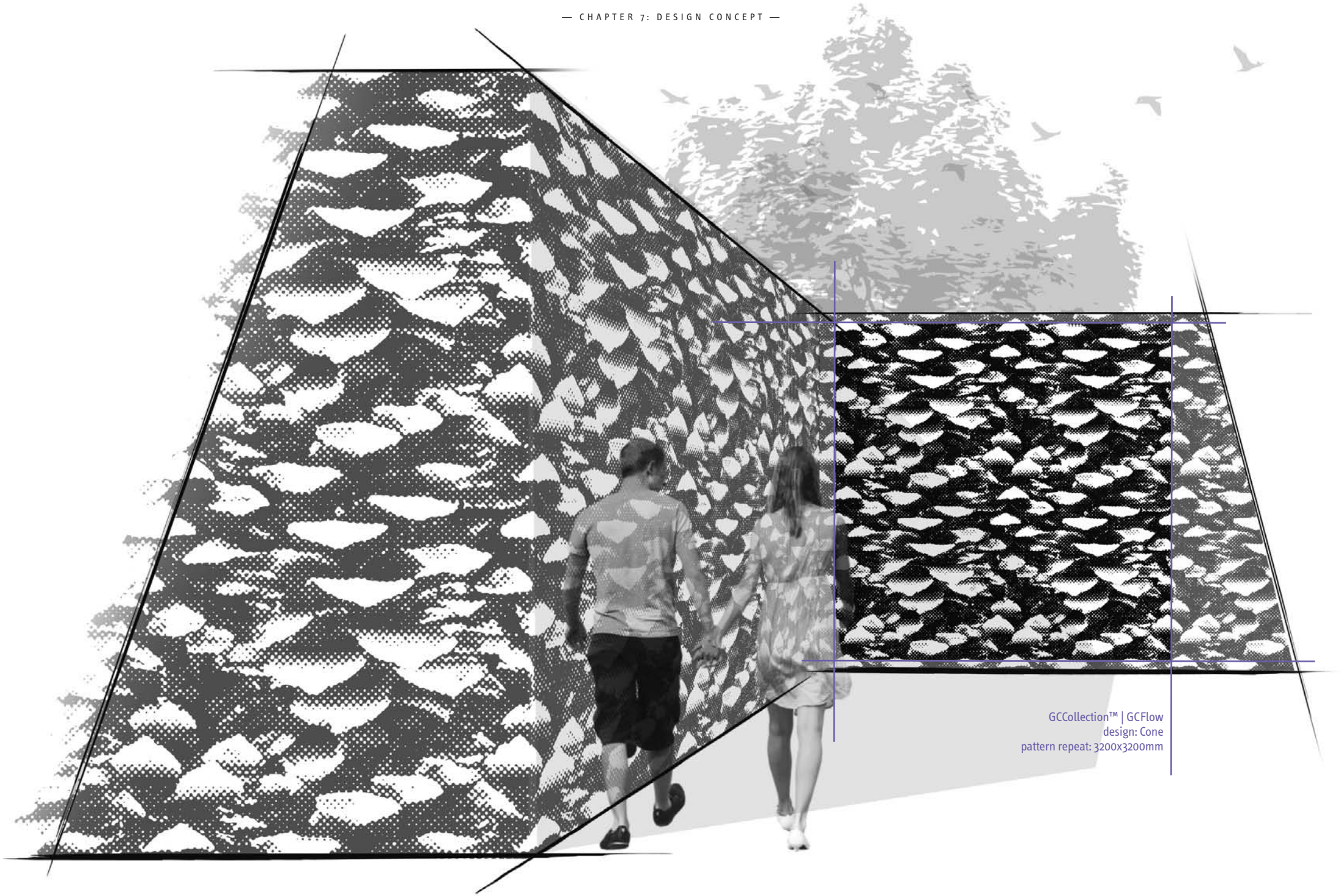
Shoreline



GCCollection™ | GCFlow
design: Shoreline
pattern repeat: 3200x3200mm

GCCollection™ | GCFlow

Cone



GCCollection™ | GCFlow
design: Cone
pattern repeat: 3200x3200mm

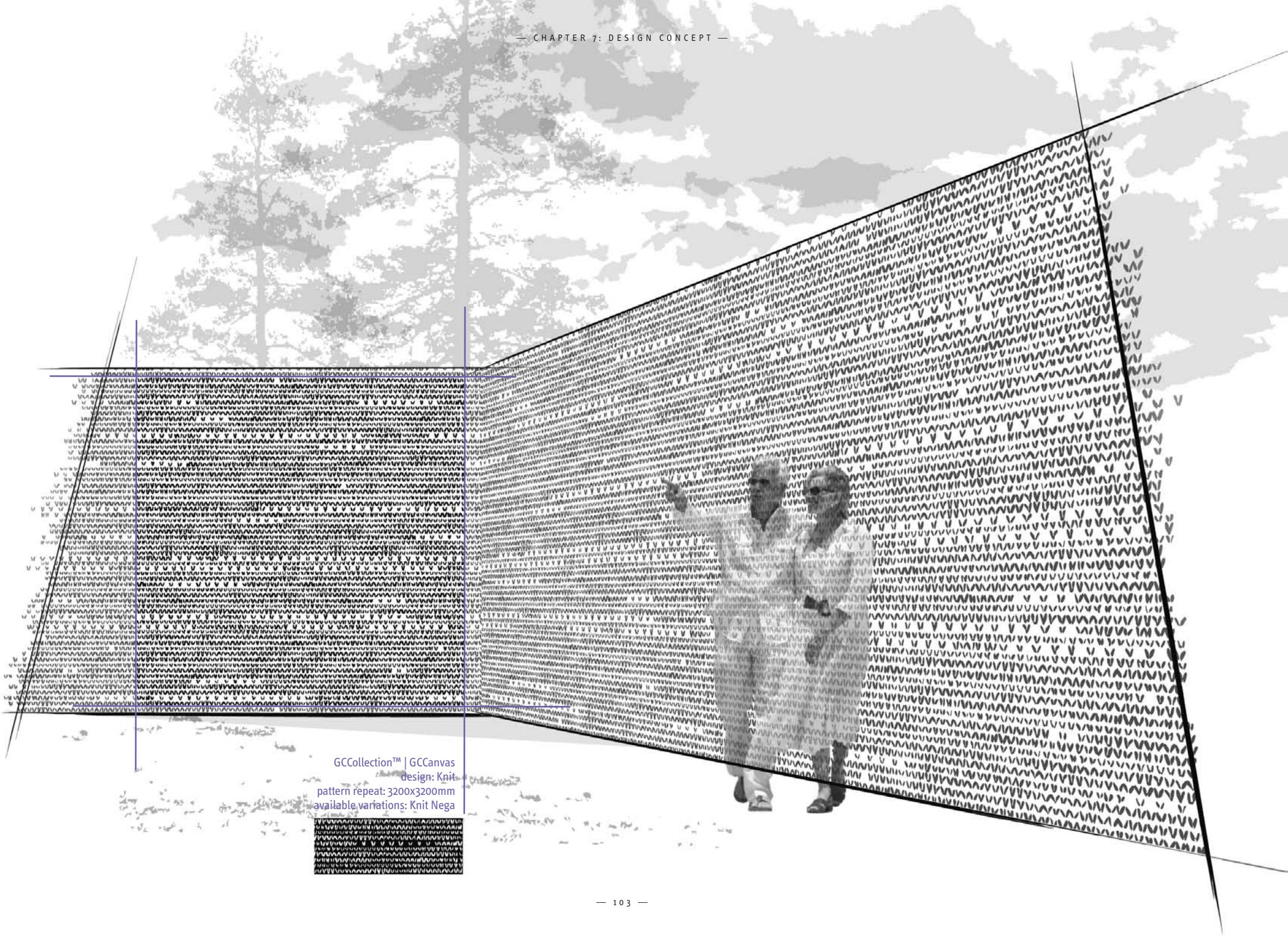
GCCollection™ | GCCanvas

GCCanvas creates a sense of approachability through designs that reflect the presence of human imprint. It reveals the hidden warmth in concrete character through rhythmic patterns and textures familiar from everyday life. The designs are inspired by authentic crafts and artisan structures that bring about an inviting, homely atmosphere. GCCanvas features a range of hand drawn patterns, ornaments, and three-dimensional textures with a tactile edge.

GCCanvas provides solutions especially for interior, residential, commercial and public destinations.

GCCollection™ | GCCanvas

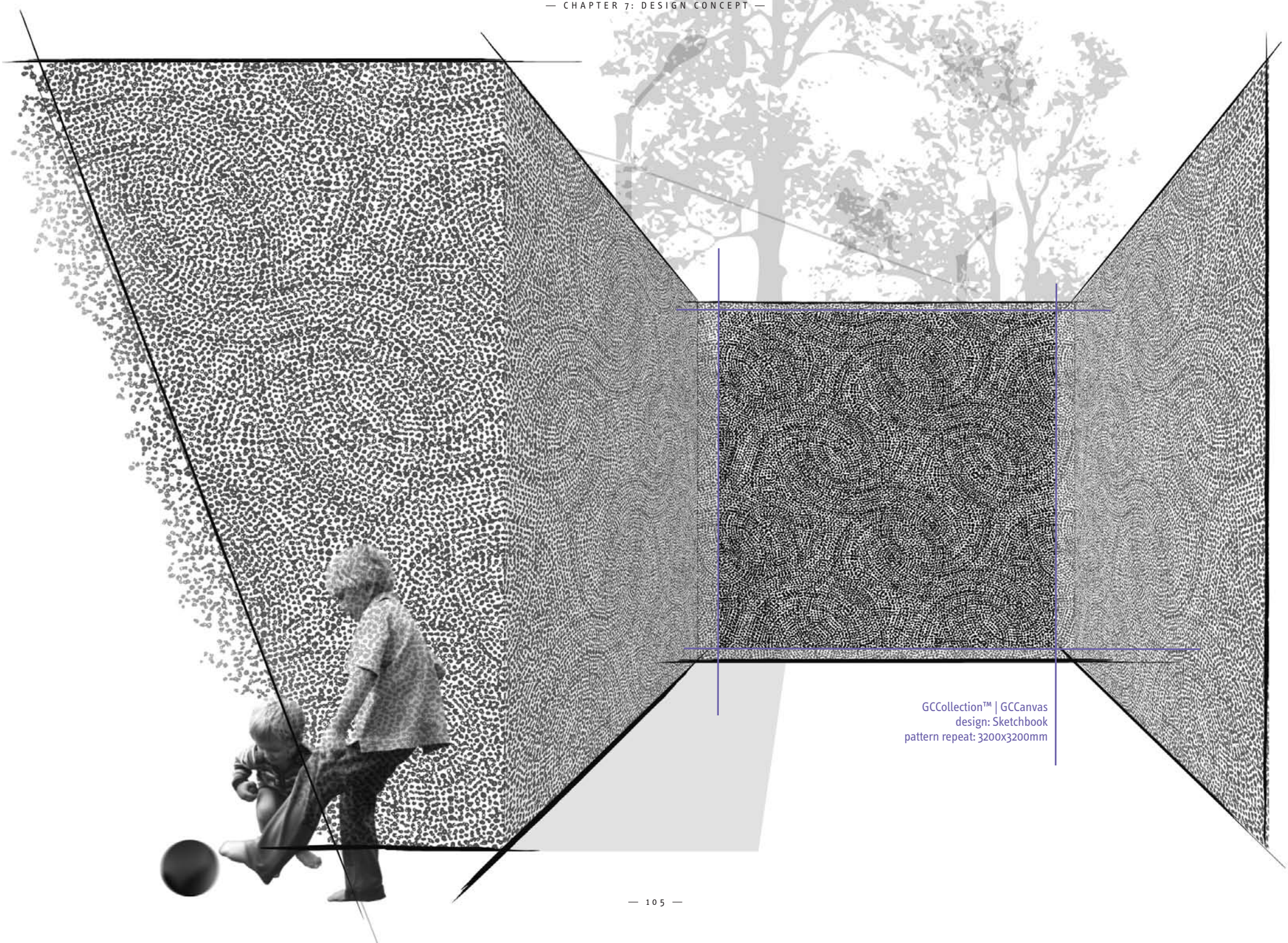
Knit



GCCollection™ | GCCanvas
design: Knit
pattern repeat: 3200x3200mm
available variations: Knit Nega

GCCollection™ | GCCanvas

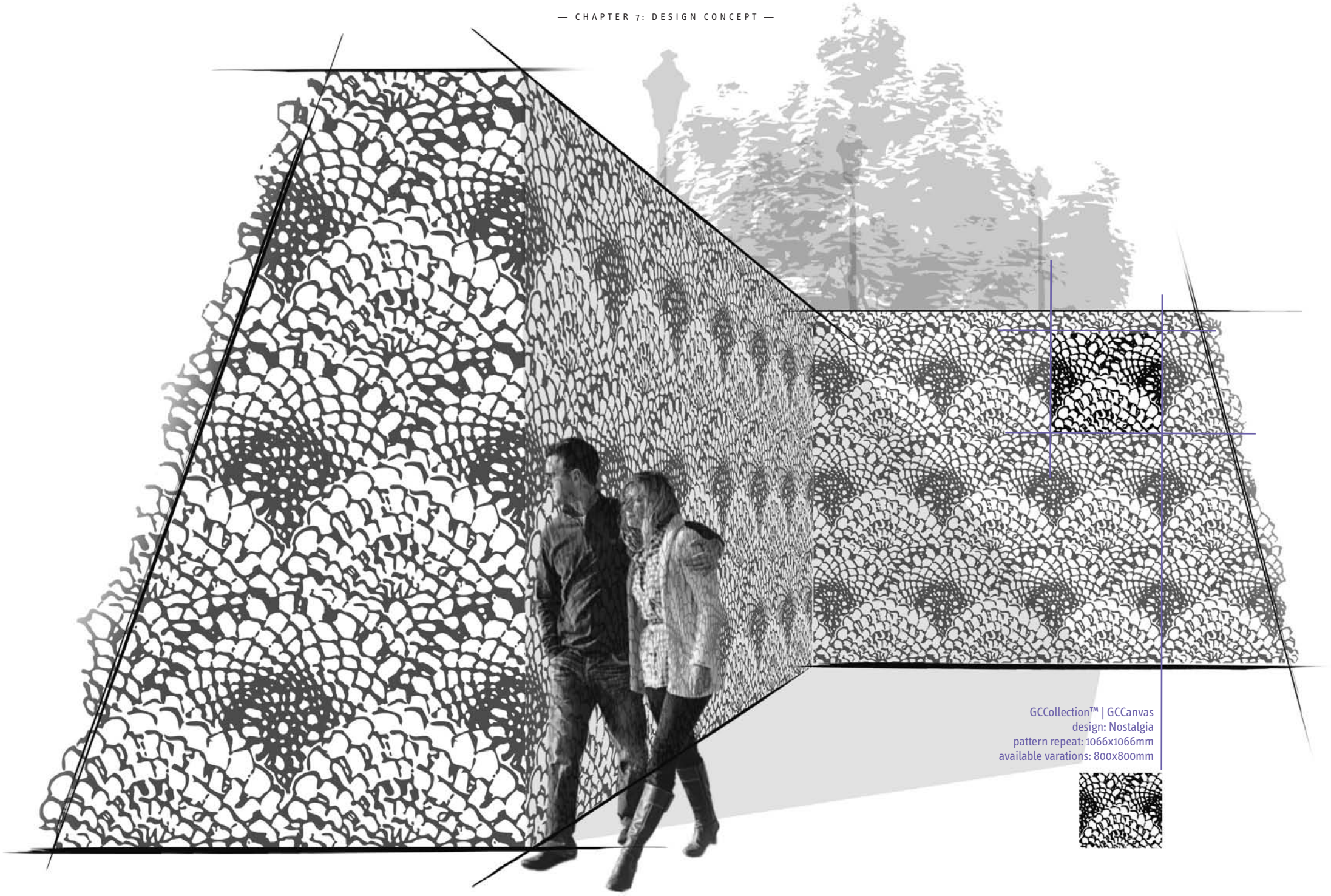
Sketchbook



GCCollection™ | GCCanvas
design: Sketchbook
pattern repeat: 3200x3200mm

GCCollection™ | GCCanvas

Nostalgia



GCCollection™ | GCCanvas
design: Nostalgia
pattern repeat: 1066x1066mm
available varations: 800x800mm

8: Conclusions

Textile Inhabiting Stone

In the beginning of my thesis process I confess I had little experience of the principles, operational model, and working culture of architecture. However, I have always had a keen interest in the architectural environment from the point of surface design; its ability to generate visual and haptic experiences, to incorporate narrative elements, to place the building to a larger context - in other words, to create meaning and sense of value to everyday surroundings. Therefore, the topic of my thesis has been an extremely motivating and rewarding one, and I have had the opportunity to learn a great deal about it through interviews, research, dialogue with Graphic Concrete, and independent work on strategy and product design.

The thesis process has confirmed my belief in the ability of a textile designer to be able to support architectural design and to deliver new perspective to the field. I was impressed with Graphic Concrete in taking along a person not only from a 'soft industry', but with no direct working history with architecture as such. This is a good example of open-minded approach for small businesses in general; as an external professional I believe I was able to probe the industry with fewer preconceptions, potentially revealing novel insights as well.

I feel there is a strong demand for a multidisciplinary approach in architecture in terms of bringing together know-how from a wider domain. For textile designers, the synergy with architects should be obvious, as textile design focuses on understanding and generating two-dimensional structures and repetitive patterns. The textile design techniques offer a well suited complement for the three-dimensional domain of architects, the two design industries supporting each other. However, the round of expert interviews revealed there are still some deep-rooted perceptions of surface design being somewhat inferior decoration in contrast to the architectural concept itself as the central point. Some of the interviewees even questioned the entire topic and significance of my study. In my opinion, this kind of strict territorial mentality between the disciplines feels obsolete and unfruitful in terms of achieving the full potential in both the design process and end product quality. At the same time I take my hat off to those interviewees who already were involved in multidisciplinary working culture and motivated to discover new and improved design solutions.

Personal Contribution

I began my thesis project by proposing co-operation to Harri Lanning, the CEO of Graphic Concrete, in August-September 2012. There was a clear synergy in our mutual interests, as Graphic Concrete had already made the decision to renew their in-house collection, and I was eager to broaden my know-how as a designer to architectural surfaces and strategic product development. I created project proposals from my point of interests and Lanning suggested alterations to them. Also, the Consulting Architect at Graphic Concrete, Jutta Telivuo, attended these discussions. The final project scope and research questions were defined together during these rounds of negotiations.

Due to the size of the company, Graphic Concrete was understandably interested in the operational usability of my thesis with respect to the resources invested in it. We agreed the thesis should address matters of practical utility, and the main deliverables would consist of the Design Guidelines and the illustrated concept featuring finalized patterns. Having a strong professional background in industrially and commercially orientated design projects, this was not a problem for me. On the contrary, I found it motivating to be able to combine academic research with pragmatic tools and hands-on end products. I especially enjoyed the possibility to learn about developing a long-term product strategy, which I had not had the opportunity to deal with during my previous working history. However, if the project scope would have allowed it, I would have been interested in developing the trend forecast towards holistic foresight thinking process. This could have included a full Delphi method with iterative expert interviews instead of the single round I conducted for my thesis. That way, I could have validated the research results and developed the trend descriptions into comprehensive scenarios. Also, having more time, I could have elaborated more on the theories of trend forecasting. But as defined within the existing project scope, the main emphasis of my thesis is in the production basis, and consequently I needed to address that portion in closer detail.

Personally, I think one of my strength areas as a designer is in creating meaning and additional value within the given project scope. This was also something Graphic Concrete recognized in the beginning of our co-operation. For them, the most important contribution of my thesis project has been in the modification of the trend related data into company specific workable material. This included developing the identified trends not only into visual instructions, but translating them into a written format as well. For me, designing information is always an interesting task, and for this project, it was a vital part of the entity. Dealing with both internal and external audiences of Graphic Concrete, employees and customers alike, was an ext-ra challenge. The different sections of the thesis had to be composed with diverse target groups in mind. Creating a consistent line of product titles, defining the key messages and controlling the tone of voice of communication was an elemental part of the design management process.

For me, the thesis process has been a professionally gratifying project because of the extent of independency in my work. After agreeing on the project scope I was free to define my own schedules, research methods and meetings. During the project I set up regular meetings with Graphic Concrete. These work sessions were a good opportunity to keep the company in loop on how I was proceeding with my project and to receive valuable feedback of the results so far. Therefore, the thesis process succeeded well from the point of project management, too, and I was able to hold on to the timetable according to my original project proposal.

Evaluation of Results

Even though there was not enough time to conduct repetitive rounds of expert interviews, I feel the wide sample and diversity of interviewees compensated for this in the validity of results. Also, having the interviews divided into two sections, addressing trend related phenomena and user experiences, was efficient in terms of fueling both the forecasting process and the product strategy. One thing which could be seen missing from the research is a competitor analysis, of which I did discuss with Graphic Concrete. However, with a unique technological innovation like graphic concrete® in question, there are no identical products or brands in the market to be compared with. Instead, the interviews revealed the competition has more to do with budgetary issues and the decision making process in construction business (Chapter

5.2: Customer Segmentation). Here, the main obstacle for using graphic concrete® can be a plain brick tiling due to the price of the material. As evaluating these kinds of causations proved to be unproductive, the competitor analysis was left out of the research scope.

The primary goal of the thesis addressed the immediate challenges of the GCCollection™ including the operational model, optimal presentation formats, and the desired pattern features. I think these objectives were well achieved. The findings in my thesis also support the recently renewed company websites, an in-house development project Graphic Concrete carried out at the same time during my thesis. Although the overlapping timing of the two projects may not have been an ideal solution, most of my insights and deliverables can be applied to the website in the future. The secondary goal of the thesis project dealt with making the GCCollection™ current through the trend research. Here, the challenge for Graphic Concrete will be in monitoring the evolution of the identified trends. Even though the time span of the forecast is extensive, there will certainly be shifts and nuances in trends which will cause Graphic Concrete to revise the GCCollection™ offering (Chapter 5.3: GCCollection™ Collection Strategy, PDCA cycle in product management).

The new Design Guidelines offer not just three separate sub-categories, but also various approaches to the execution of identified concepts. Some of the instructions may even become redundant in the operational use of the guiding tool. Nevertheless, in the launching phase of the Guidelines I believe it is important to offer excessive amount of guidance and inspiration rather than too little, risking the collection concept not to provide enough diversity. In the future, the Design Guidelines will most likely be updated and refined according to the customer feedback along with the revised trends.

Although I myself was in charge of developing the Design Guidelines, it was surprisingly challenging to create the patterns representing the renewed collection concept. Here, I found myself being very ambitious in terms of the design quality, as the patterns should exemplify the strategic output, and ideally to crystallize the entire thesis. I designed approximately thirty five to forty sketches in total, of which about fifteen I presented to Graphic Concrete, and of those a few were worked on into refined versions. I was happy with the straightforward feedback I received from Graphic Concrete, as they had the expertise to evaluate which designs had the potential and, more importantly, why. The design process also concretized the technical limitations of graphic concrete®, allowing me to familiarize myself in it not only from the point of strategic instructions, but from a hands-on approach, as well.

In the illustration of the Design Concept for GCCollection™ I took the liberty to approach the presentation format of the patterns from a conceptualized level. Instead of providing a range of extracted features (Chapter 5.3: GCCollection™ Logistic Features), I created concept drawings with highlights to the technical information. This fictional 'zoom' could function as an interactive user interface in Graphic Concrete webpages in the future. Alternatively, I could have created a finalized layout for a collection brochure, but given the extent of the thesis this would have been an independent project in itself. The full-page close-ups of the patterns are created with Photoshop due to limited amount of resources, as it would have been far more time-consuming process to produce real sample tiles within the project timetable. However, I put a lot of effort in illustrating the textures and demonstrating potential colorways, as the inspirational quality of the graphic concrete designs is truly expressed only through actual concrete surfaces.

In overall, Graphic Concrete has been very satisfied with our co-operation and the outcome of the thesis project. The Design Guidelines are taken into use in the beginning on summer 2013, and six of the final nine patterns I designed are included in the new GCCollection™ as sales items. Graphic Concrete has also expressed their interest in applying my presentation method of the concept in their future websites.

Development Opportunities for Graphic Concrete

Based on the interviews, the strongest trend in surface design is the increasing interest in three-dimensional expression. Therefore, I included design elements in the Design Guidelines and Concept that support this preference visually. However, this is only a short term solution to respond to the market needs. For Graphic Concrete, there is great potential in developing the technology so that the graphic effect could be combined with actual three-dimensional base, creating a deeper sense of depth. I believe the products that are able to provide both visual and tactile user experiences, to communicate through multiple senses, will be the killer applications in the near future.

The interviews revealed also the current bottle neck in the production process, consequently reflecting to the brand reputation of Graphic Concrete. This is the concrete manufacturers' competence or incompetence to achieve the desired product quality. The only way to tackle these problems is for Graphic Concrete to increase training with the manufacturers, which, of course, they are already conducting. Along with the intensified interaction there could be a change to harness the manufacturers to a more active role as Graphic Concrete spokespersons. The company could achieve wider brand awareness through a network of factory showrooms featuring their products.

Another significant opportunity would be to team up with producers of other building materials outside the concrete industry. The ability to mix and match various surface materials from a coherent design collection could increase the recognizability and usage of Graphic Concrete product line. It would offer the architects the chance to have more continuity among the material pallet for an integrated look in facades. The design patterns could be available for instance in glass products, with branding 'by Graphic Concrete design' or similar, to support the original company brand and collection.

9: Acknowledgements

I would like to give my thanks
to the following parties
involved in the thesis work:

Graphic Concrete for an inspiring project and co-operation;

the interviewees for sharing their time, know-how and insight;

Heidi Paavilainen and Pirjo Kääriäinen, Aalto University, for mentoring;

and my husband Ari for constant love and support!

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Pattern designs and illustrations in Chapter 7: Design Concept for GCCollection™ by Anna Kuukka

11: Appendix

Interview Questions

Questions about surface design trends in general:

Q1.1: What are the most important trends and phenomena influencing architecture and construction at the moment?
What about the most important trends influencing surface design?
What kind of materials and structures are there?
Are there regional differences in the trends? If so, what are the differences and why?

Q1.2: What are the most significant opportunities regarding surface design solutions? The solutions may include materials, structures, textures, surface treatments, colors, technologies etc.
What about the opportunities in the future? Why?

Q1.3: What are the current threats or weaknesses regarding the surface design solutions?
What about in the future? Why?

Q1.4: In order to better respond the future needs; to what kind of direction should the surface design solutions be developed? The future needs can be studied from the perspective of the architect, the constructor, the end user etc.

Q1.5: Are there any specific characteristics in the Finnish surface design that are successful in the global market?
If so, what are the characteristics?
If not, are there any features in Finnish design that should be developed and utilized?

Q1.6: Question about your personal dreams and wishes:
What kind of surface design solutions would you yourself like to see in the future?
These solutions do not have to be based on existing solutions or technologies.

Questions for professionals experienced in working with graphic concrete® solutions:

Q2.1: On what basis do you choose the surface materials for each construction project, what are the reasons for your decisions?

Q2.2: What kind of image do you have on graphic concrete® as surface design solution and technology at the moment? Why?

Q2.3: If you have worked with Graphic Concrete™, how was the experience?
How did the project go, where there any problems with the legislation, bureaucracy etc.?

Q2.4: If you designed your own pattern instead of using the ready-made patters of GCCollection™, why?

Q2.5: What could support and enhance the use of GCCollection™?
What kind of presentation and demonstration format/media of the collection would be the most useful and attractive one?

Q2.6: How could Graphic Concrete Ltd provide better service during the different phases of architectural design and construction projects?

Q2.7: What kind of patterns should there be available in GCCollection™?